haacon

Assembly and Operating Instructions

Lifting, rolling and loading system
Type 1350.10 – 012
DP No. 209841

With swivel bar,
cable breakage brake
and electric drive

Order N° 257 922 01-01

Certified in accordance with DIN EN ISO 9001

Member of the DWT

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Instructions for safe working

Before starting work with the lifting, rolling and loading system for the first time, it is necessary to have read and understood these operating instructions

The unit may only be installed, used and serviced by persons who are familiar with the assembly and operating instructions and who have received the appropriate specialist training.

The “lifting, rolling and loading system” may only be used for its intended correct purpose. Correct use is loading and unloading the aircraft Transall C-160 and Hercules with the lifting, rolling and loading system, as well as depositing and placing down cabins with ISO corners from a carrier vehicle.

Before lifting / lowering and rolling the cabin, install the unit correctly.
It is prohibited for persons to remain in the danger area.

Check every time before use:

- Tyre pressure 6 bar
  Obligatory for loading into the aircraft and rolling speed 6 km/h.
- Tyre pressure 10 bar
  For rolling speed > 6 km/h.
  Max. speed 16 km/h. Only rolling in a narrow track set-up is permissible.
- Function of the automatic brake (cable breakage safeguard)

If the cable of the on-board cable winch breaks:

- Visually inspect the wheels for wear and external damage, and replace if necessary.
- Check the function of the automatic brake (see C 6.4 Brake adjustment).

The following is not permitted:

Remaining on, in and below the raised cabins, as well as transporting persons.

Do not fix anything with lashing straps on parts of the system.

The unit conforms to the regulations of BGV D8 (accident prevention regulations for winches, lifting units and towing units)
Pay attention to the valid laws and regulations governing accident prevention.

Inspection by an expert

The lifting, rolling and loading system must be inspected by an expert depending on the conditions under which it is used and the operational conditions, but **at least once annually** (annual operational safety inspection in accordance with the accident prevention regulations BGV D8, Section 23, Paragraph 2).
In all cases before the lifting, rolling and loading system is put back into operation, service the safety-relevant parts, e.g. the bar, gear unit, boom, rack and set of wheels.
Experts are persons who, by virtue of their specialist training and experience, have sufficient knowledge in the field of winches, lifting units and towing units and who are familiar with the relevant national work safety regulations, accident prevention regulations, directives and generally recognized technical regulations (e.g. DIN-EN standards) to the extent that they are able to assess the operational state of the lifting, rolling and loading system.

Manufacturer’s and customer service address:

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Please state the following when ordering spare parts:

Type 1350.10 - 012
Year of construction
Serial No.
Order No. from the spare parts list in the Appendix.
Required quantity.

A. General description of the system

A.1 System description

The lifting, rolling and loading system 1350.10 allows cabins to be loaded into and unloaded from the aircraft Transall C-160 and Hercules, enables the cabins to be lifted onto and off the carrier vehicle without additional aids, and permits cabins to be rolled on a flat, firm surface.

The system consists of:

- Swivel bars.
- Four each of booms, racks, gear units, sets of wheels and base plate.

A corner unit consists of a bar, a boom, a rack, a gear unit and a set of wheels.

- A two-wheel caster assembly for roller operation.
  A two-wheel caster assembly consists of a center part, a cross bar, a brace, a bolt and two steering levers.
- An (after-)steering rod with two steering levers.
- A tow bar for rolling the cabin over the inclined ramp.
  (the cable of the on-board aircraft cable winch is attached to the tow bar)
- Two separable connecting shafts. Two corner units can be connected in each case.
- Two crankcases and two cranks for single and paired drive.

Linkage points for the lifting, rolling and loading system are the ISO corners of the cabins.

A.2 Technical data

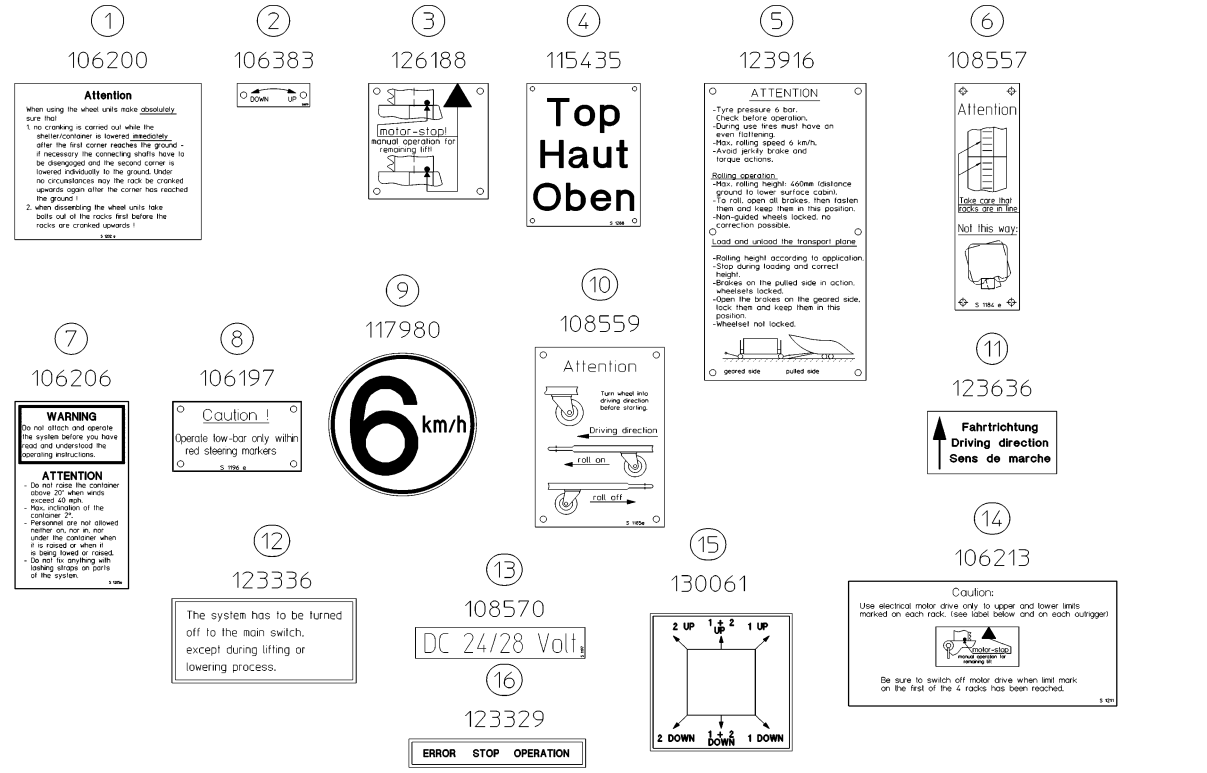
Carrying force / set (4 supports)		100	kN
Carrying force / support on wheels	Tyre pressure 6 bar	32	kN
Carrying force / support on base plate		50	kN
Lifting height on base plate / set of wheels	(=bottom edge of cabin to floor)	1750	mm
Crank force / pair of supports	(at full load)	140	N
Stroke / crank revolution		2,36	mm
Rolling speed max.		6	km/h
Weight without options	approx.	1360	kg
E-drive:			
Power (E-motors)	2x	700	W
Current type		24 / 28	V
Power consumption	max.	2 x 38	A
Lifting speed	approx.	260	mm/min
Weight	approx.	75	kg
max. system incline	(sign 106205 on the bar)	2°	
max. angle, base plate		6°	
max. ground pressure, base plate		25	N/cm²
Ground composition			
when setting down on base plate	firm surface (pay attention to max. ground pressure)		
when setting down on wheels and rolling operation	surface similar to runway e.g. concrete or tarmac		
Setting down permissible uo to wind speed		64	km/h
Temperature range		-30° – +50°	C

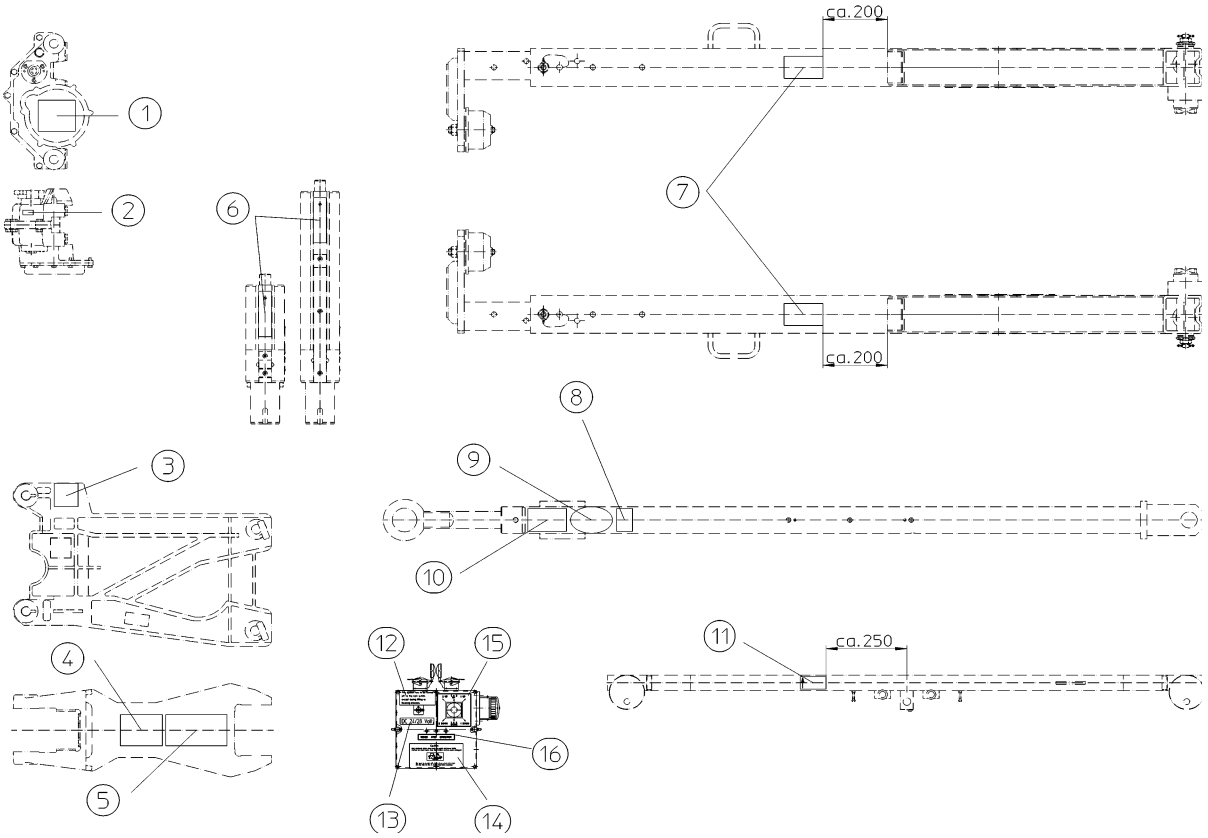
Individual weights:				
Item. no.	**Qty.**	**Designation**	**DP - No.**	**Weight: unit / set**
1	4	Gear unit	128031	23,0 kg / 92,0 kg
2	4	Boom	123167	48,0 kg / 192,0 kg
3	2	Rack	108764	36,0 kg / 72,0 kg
4	2	Rack	108765	41,0 kg / 82,0 kg
5	2	Rack extension	108803	14,0 kg / 28,0 kg
6	2	Rack extension	108801	9,0 kg / 18,0 kg
7	2	Bar, left	121956	66,0 kg / 132,0 kg
8	2	Bar, right	121955	66,0 kg / 132,0 kg
9	8	Bolt	109367	1,7 kg / 13,6 kg
10	4	Wheel unit	123168	87,0 kg / 348,0 kg
11	2	Crank	108800	1,5 kg / 3,0 kg
12	2	Crankcase	108762	5,5 kg / 11,0 kg
13	2	Extension	202222	1,5 kg / 3,0 kg
14	2	Connecting shaft	108804	7,0 kg / 14,0 kg
15	2	Connecting shaft	123022	15,0 kg / 30,0 kg
16	1	Center part	109752	22,0 kg
17	1	Cross bar	109751	35,0 kg
18	1	Brace	109756	14,0 kg
19	2	Steering lever	123173	6,0 kg / 12,0 kg
20	1	Bolt	109146	3,0 kg
21	2	Steering lever	123170	6,0 kg / 12,0 kg
22	1	Steering rod	123614	10,0 kg
23	8	Bolt	123615	1,6 kg / 12,8 kg
24	4	Base plate	108712	6,0 kg / 24,0 kg
25	2	Extension	123093	7,0 kg / 14,0 kg
26	4	Retaining bracket	121954	2,7 kg / 5,4 kg
27	1	Tow bar	123171	16,0 kg
28	2	Retaining bracket	123688	2,7 kg / 5,4 kg
29	2	Retaining console	123689	5,0 kg / 10,0 kg
Option:				
30	1	Open-ended spanner a/f 30	300569	0,5 kg
31	1	Single-end open ended spanner a/f 24	301104	0,5 kg
Lifting, rolling an loading, total weight				= approx. 1350 kg
32	1	Electric drive	209842	75,0 kg
33	1	Mounting thread	209153	19,0 kg

A.3 Technical information on the system

Please note:

Notice plates prevent accidents and damage on the system.


1
106200
Attention
When using the wheel units make absolutely sure that:
1. no cranking is carried out while the shelter/container is lowered immediately after the first corner reaches the ground - if necessary the connecting shafts have to be disengaged and the second corner is lowered individually to the ground. Under no circumstances may the rack be cranked upwards again after the corner has reached the ground !
2. when dissembling the wheel units take bolts out of the racks first before the racks are cranked upwards !
2
106383
DOWN
UP
3
126188
motor-stop!
manual operation for remaining lift!
4
115435
Top
Haut
Oben
5
123916
ATTENTION
-Tyre pressure 6 bar.
-Check before operation.
-During use tires must have an even flattening.
-Max. rolling speed 6 km/h.
-Avoid jerkily brake and torque actions.
Rolling operation.
-Max. rolling height: 460mm (distance ground to lower surface cabin).
-To roll, open all brakes, then fasten them and keep them in this position.
-Non-guided wheels locked, no correction possible.
Load and unload the transport plane.
-Rolling height according to application.
-Stop during loading and correct height.
-Brakes on the pulled side in action, wheelsets locked.
-Open the brakes on the geared side, lock them and keep them in this position.
-Wheelset not locked.
geared side
pulled side
6
108557
Attention
Take care that racks are in line
Not this way:
7
106206
WARNING
Do not attach and operate the system before you have read and understood the operating instructions.
ATTENTION
- Do not raise the container above 20° when winds exceed 40 mph.
- Max. inclination of the container 2°.
- Personnel are not allowed neither on, nor in, nor under the container when it is being lowed or raised.
- Do not tie anything with lashing straps on parts of the system.
8
106197
Caution !
Operate low-bar only within red steering markers
9
117980
6 km/h
10
108559
Attention
Turn wheel into driving direction before starting.
Driving direction
roll on
roll off
11
123636
Fahrtrichtung
Driving direction
Sens de marche
12
123336
The system has to be turned off to the main switch, except during lifting or lowering process.
13
108570
DC 24/28 Volt
14
106213
Caution:
Use electrical motor drive only to upper and lower limits marked on each rack. (see label below and on each outrigger)
motor-stop!
manual operation for retracting lift
Be sure to switch off motor drive when limit mark on the first of the 4 racks has been reached.
15
130061
2 UP
1 UP
1 UP
2 DOWN
1 DOWN
2 DOWN
16
123329
ERROR STOP OPERATION



A.4 Part designations and depiction

1	Gear unit	40	Retaining bar
2	Boom	41	Boom arm
3	Rack	42	Manual cable winch
4	Rack	43	Tie bolt
5	Rack extension	44	
6	Rack extension	45	Lock, bar
7	Bar, left	46	Lock, retaining bracket
8	Bar, right	47	Square bolt
9	Bolt	48	Boom support
10	Wheel unit	49	Ball head
11	Crank	50	Hook
12	Crankcase	51	Wheels
13	Extension	52	Hub
14	Connecting shaft (short)	53	Bolt
15	Connecting shaft (long)	54	Bolt
16	Center part	55	Brake
17	Cross bar	56	Bolt
18	Brace	57	Vertical journal
19	Steering lever	58	Bolt
20	Bolt	59	Bolt
21	Steering lever	60	Lock
22	Steering rod	61	Bolt
23	Bolt	62	
24	Base plate	63	Bolt
25	Extension	64	Bolt
26	Retaining bracket (standard fitting)	65	
27	Tow bar	66	Sleeve
28	Retaining bracket (exchanged bar attachment)	67	Locking bar
29	Retaining console (wide track gaude)	68	
30	Open-ended spanner a/f 30	69	
31	Single-end open ended spanner a/f 24	70	Gear motor
32	Electric drive	71	Switch box
33	Mounting thread	72	Drive cable
		73	Power cable
		74	Drive shaft
		75	Spring cotter

Parts 1 – 33 are identical to the drawing 1350.10 – 012 (see Page 10).
Parts 40 – 75, see figure.

Option:
Mounting thread: – 209152 = Cabin height 8” and 8 ½”
– 209153 = Cabin height 7” and 7 ½”
Electric drive: – 209842

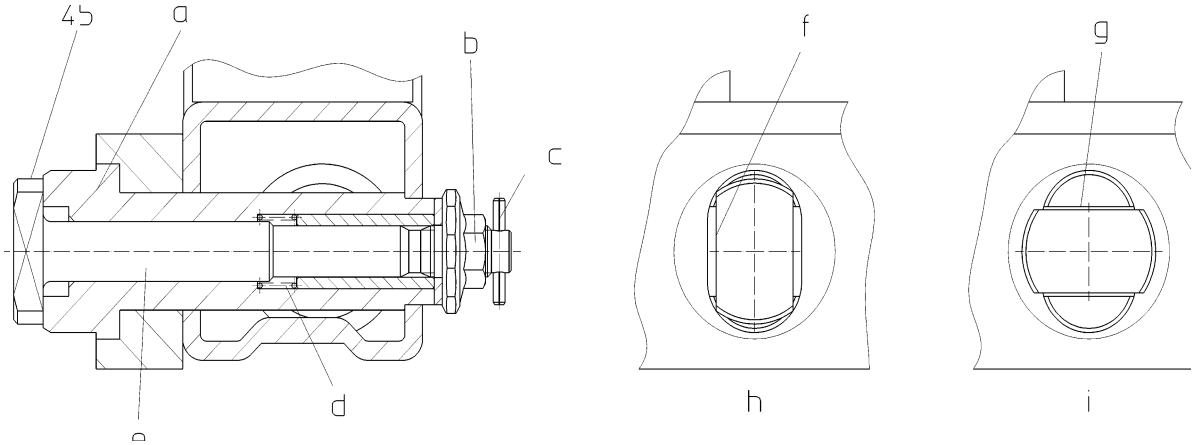
33
32
4570
3860
2585
1880
705
2510
3145
18
25
16
19
20
17
23
8
10
6
4
2
12
1
C141
5
3
C130
7/8
26/28/29
7
15
14
13
11
24
9
C130
C141
27
22
21
Rollbetrieb Breitspur
Ziehen
(horizontale Rampe)
Rolling wide track
Pulling
(horizontal ramp)
Rollbetrieb
Schmalspur
Ziehen
Rolling
narrow-track
Pulling
Anheben und
Absetzen
Lifting and
lowering
Ziehen
(schräge
Rampe)
Pulling
(inclined
ramp)
Nachlenken
Steering rod
Rollhöhe
max 460
Travelling height
Höhe 2438 (2132, 2285, 2591)
Height
Containermaße:
Länge: 6058mm
Breite: 2438mm
Container dimensions:
Length: 6058mm
width: 2438mm

B Basic structure of the system

Explanation of the bar lock:

The method used to fasten the bars to the cabin is the same on all four bars. All bars are bolted twice into the lower ISO corners for rolling and once into the lower ISO corners for setting down.

A lock (45) is permanently fitted on all bars. The second lock (46) is installed in the retaining brackets (26 / 28) and the retaining console (29) so that it cannot get lost, and is required for rolling.

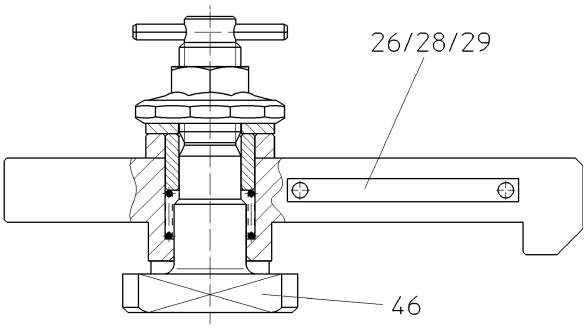


a = locking piece; b = nut; c = bolt; d = spring; locking bolt; f = edge; locking bolt; g = slot-shaped opening; h = unlocked; i = locked

Structure and function of the lock:

In the unlocked position, the bars are inserted into the ISO corners with the lock (45) or are removed for dismounting. The lock (46) of the retaining bracket / console (26 / 28 / 29) is inserted in the same position through the oval openings of the bars and into the ISO corners.

A **spring** ensures that the **locking bolt** is always pressed against the **locking piece**. The **nut** is opened by turning it anticlockwise. The **locking bolt** can be swivelled with the **bolt**. When the **edges of the locking bolt** cover the **slot-shaped opening of the locking piece**, the **locking bolt** is pressed into the **slot-shaped opening of the locking piece** with the aid of the **spring**. The positive fit guarantees secure locking.



After the positive fit is obtained, the **nut** is tightened. The bar – ISO corner connection forms a secure connection.
The **bolt** and the **edges of the locking bolt** have the same position.

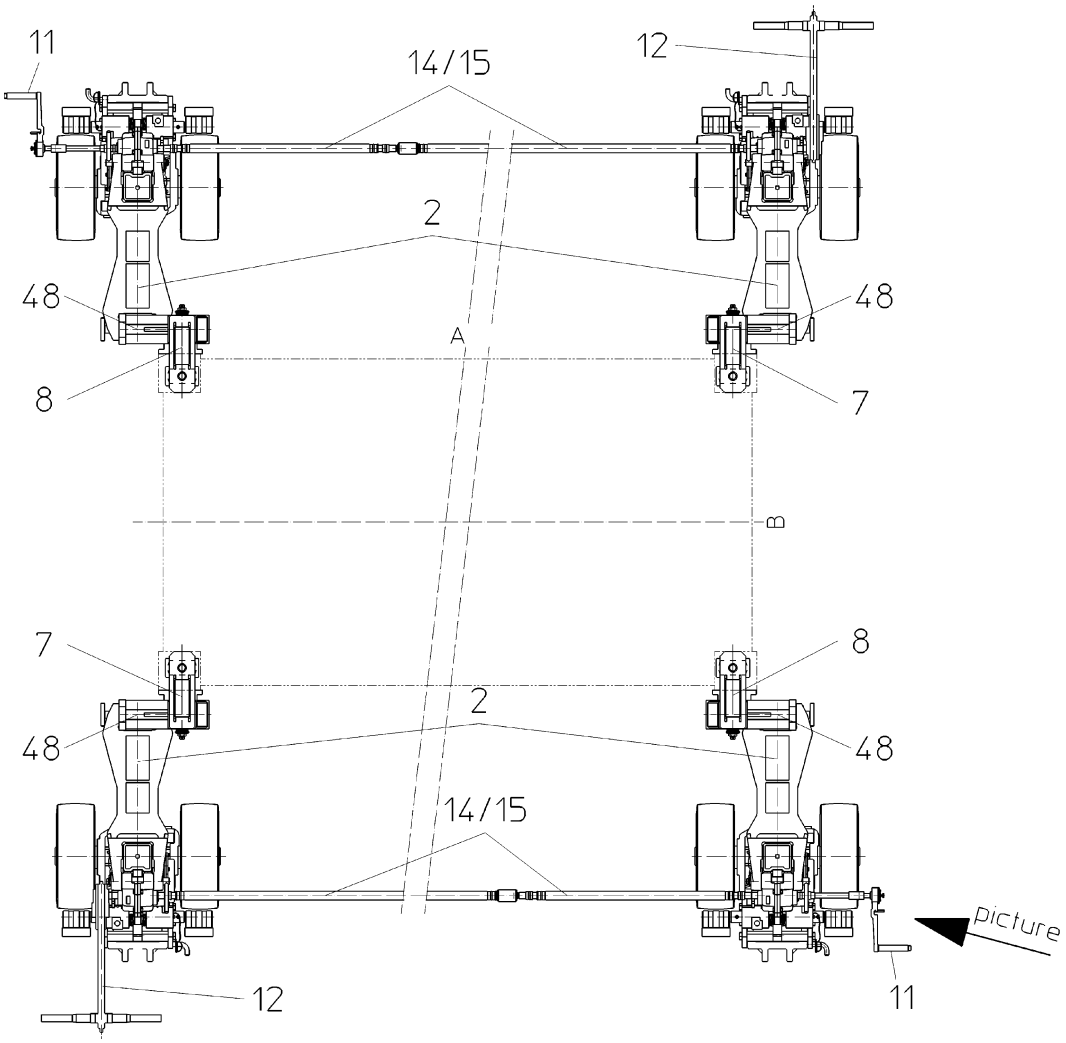
This means:

- **Horizontal position / lock closed**
- **Vertical position / lock open.**

If the **nut** is undone, the **locking bolt** can be pressed in and the lock can be released by swivelling round the **bolt**.

B.1 Basic structure for loading and unloading the carrier vehicle

– Fit the bars (7 / 8) without the retaining brackets (26 / 28). The boom support (48) of the bars projects on the front wall of the cabin.
– Fit the four booms (2) at 90 degrees to the cabin wall. Insert the connecting shafts (14 / 15) into the gear unit (1). Operation is possible by 2 persons with the crankcase (12) or the cranks (11).



A = longitudinal side container
B = front side container

Wheel units swivelled about 90°.

B.1.1 Fitting the bars

Setting down (without retaining bracket)

- Hook the bar (7 / 8) into the upper corner mounts of the cabin.
- Insert the lock (45) through the oval opening of the ISO corner on the longitudinal side of the cabin and bring it into the lokked position.
- Tighten with the a/f 30 spanner.

The bars are correctly fitted when the boom holder (48) projects on the front side of the cabin.

Rolling

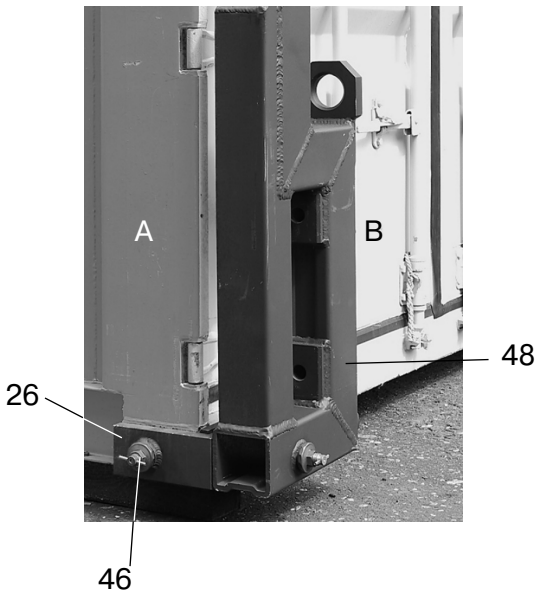
- Hook the bar (7 / 8) into the upper corner mounts of the cabin.
- Bring the lock (45) into the unlocked position.
- Insert the lock (45) through the oval opening of the ISO corner on the front side of the cabin and bring it into the locked position.

The bars are correctly fitted when the boom holder (48) is parallel to the front side of the cabin.

Attention:

Tighten the lock (45) with the nut, then fit the retaining bracket (26).
See Point B (Basic structure of the system) for the bolting method for both locks (45 / 46).

- Move the lock (46) on the retaining bracket (26) into the unlocked position.
- Insert the lock (46) of the retaining bracket (26) through the oval opening of the ISO corner on the longitudinal side of the cabin and bring it into the locked position.
- Tighten the locks (45 / 46) on the front and longitudinal side of the cabin.



Note:

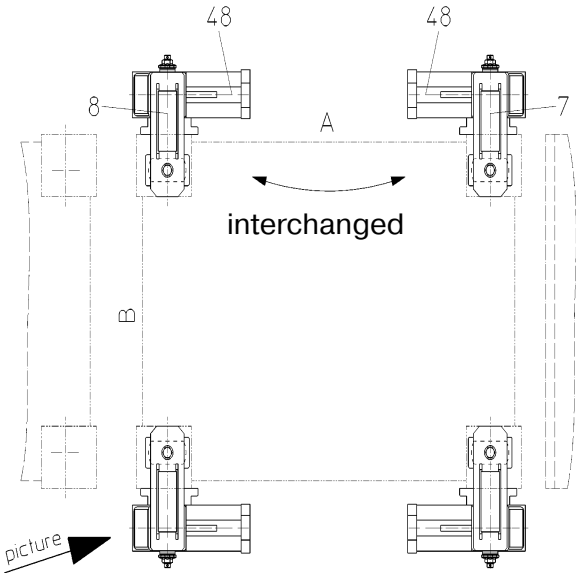
Bars (7 / 8) after setting down with the attachment parts boom (2), rack (3 / 4 / 5 / 6), gear unit (1), set of wheels (10) swivelled into the rolling position on the front side of the cabin. In this procedure, the bar remains hooked into the top ISO corner of the cabin. The bolt connection on the bottom ISO corner is released (see Point C1.3 Swivelling the bars).

B1.1.1 Fitting the bars under special conditions

– When the cabins are close one behind the other.
– Cabin on the truck next to the tailgate.

Attention:

The bars are fitted interchanged on both longitudinal sides of the cabin. The boom support (48) for fitting the boom (2) does not project on the front wall of the cabin.
With this attachment method, it is not possible to change to rolling operation.



setting down without retaining bracket

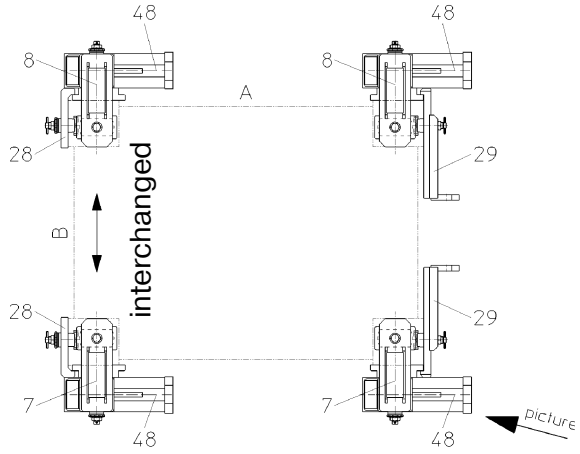
Bar with wheel unit

– Wide track rolling for loading via the horizontal aircraft ramp.

Attention:

Wide track rolling in walking speed is only permissible in the vicinity of the aircraft (max. rolling distance 50m). The cabin is aligned towards the aircraft. Avoid steering angle.

Fit the bars (7 / 8) interchanged on the front side B of the cabin facing the aircraft. The boom supports (48) of the bars (7 / 8) face inwards on the longitudinal side of the cabin. The bar must also be bolted with the retaining brackets (28).



setting down with retaining bracket and console

Attention:

This interchanged attachment method ensures that there is sufficient rolling on the aircraft ramp when the cabin is set down onto the horizontal aircraft ramp.
(see picture C 4.1)

On the second front side of the cabin, the bars (7 / 8) are fitted in the same way as for standard setting-down. The boom supports (48) of the bars (7 / 8) are outside the cabin. The retaining consoles (29) must be fitted for rolling. The two-wheel caster assembly is fitted to these retaining consoles (29).
Locking and bolting the bars.
B1.1 Fitting the bars – rolling.

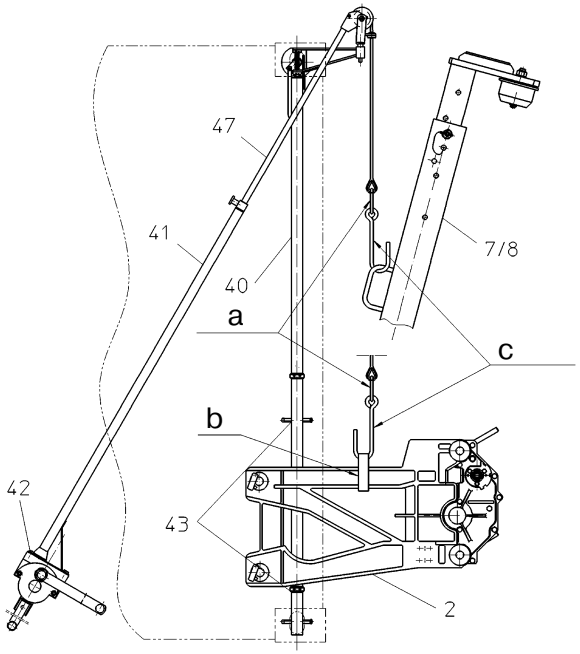
Bar with wheel unit

B1.1.2 Fitting with mounting thread (Operating Instructions 094047 enclosed)

The mounting thread consists of:
- Boom arm (41) 123796
- Retaining bracket (40) 123794 / 123793

If the cabins are on the truck, use of the two-part mounting thread simplifies fitting / removal of the bars. The mounting thread can also be used to fit the boom (2).
The boom arm (41) with the manual cable winch (42) is telescopic.

- Fit the retaining bar (40) on the longitudinal side of the cabin onto the top ISO corner and lock it by actuating the tie bolt (43).
- Extend the telescopic tube (47) to its maximum length.
- Insert the telescopic tube (47) into the boom of the retaining bar (40).
- Lower the cable with the manual cable winch (42).
- Hook the bar (7 / 8) onto the support bracket.
- Crank up the bar (7 / 8) until the boom of the bar (7 / 8) is above the ISO corner.
- Hook the bar (7 / 8) into the ISO corner from above and lower the cable when doing so.
- Remove the mounting thread.
- Lock the bars. See B.1.1 Fitting the bars – setting down.



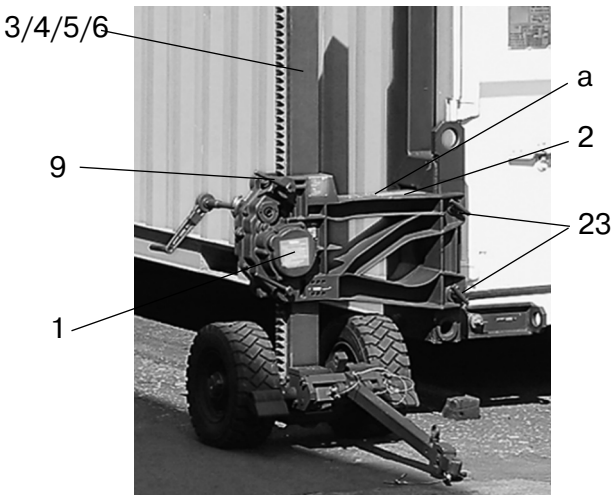
a = spring hook; b = belt; c = load hook

B1.2 Fitting the boom, rack, tooth pitch and gear unit

The boom (2), racks (3 / 5), tooth pitch (4 / 6) and gear unit (1) are interchangeable and are used on all four cabin corners.

Fitting: Boom (2)

- Pull the bolt (23)
- Push the boom (2) (with the “Top” sign facing upwards) without a guide plate onto the bar, fasten and secure with the bolt (23).



a = “Top” sign

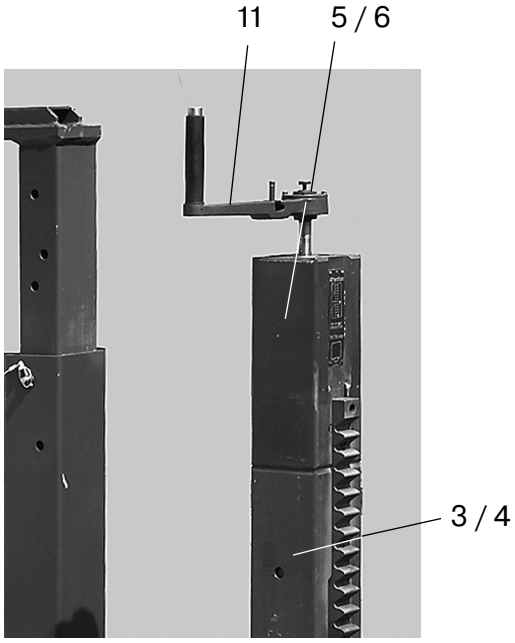
When fitting on cabins that are on the truck, the mounting thread (33) can be used as an aid to fitting. Use the supplied belt to do this. See B.1.1.2 Fitting with mounting thread

Fitting: Rack (3 / 5 + 4 / 6)

- Remove the bolt (9) on the boom (2).
- Insert the rack (3 / 5 + 4 / 6) into the support of the boom (2) with the opening facing downwards for the set of wheels. The teeth face outwards.
- Insert the bolt (9) on the boom (2).

Assembly of the rack with the associated rack extension

- Fit together the rack (3) with the rack extension (5) so that the rack rails are flush. Tighten with the crank (11).
- Connect the rack (4) with the rack extension (6) as above.



Special feature on the rack

The rack (3) and the rack extension (5) form a single unit. The same applies to the rack parts (4 / 6).
They remain bolted during setting-down and rolling across the inclined aircraft ramp.
Standard 8’ x 8’ x 20’ cabins can only be loaded via the inclined aircraft ramp.
Shorter cabins can be loaded via the horizontal aircraft ramp. In this case, the rack upper parts (5 / 6) must be removed on the racks nearest to the aircraft. This prevents collision with the aircraft’s fuselage.

Fitting: Gear unit (1)

- Remove the upper bolt (9) on the boom (2). The lower bolt secures the rack (3 / 5 + 4 / 6) to prevent it tipping out.
- Move the gear unit (1) between the upper eyes of the boom (2), pin with bolt (9) and secure with the linchpin (10).
- Remove the lower bolt (9) on the boom (2).
- Swivel in the gear unit (1), pin with the bolt (9) and secure with the linchpin.

Note:

If the gear unit cannot be swivelled into the pinning position in the boom, the gear pinion and the rack are not flush.

Remedy:

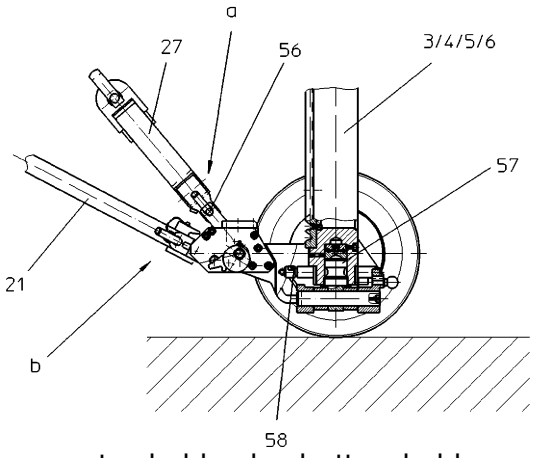
- Place the crankcase (12) onto the gear unit (1) and turn until the teeth of the gear pinion engage with the rack. The pinning position has now been reached.

B1.3 Fitting the wheel units

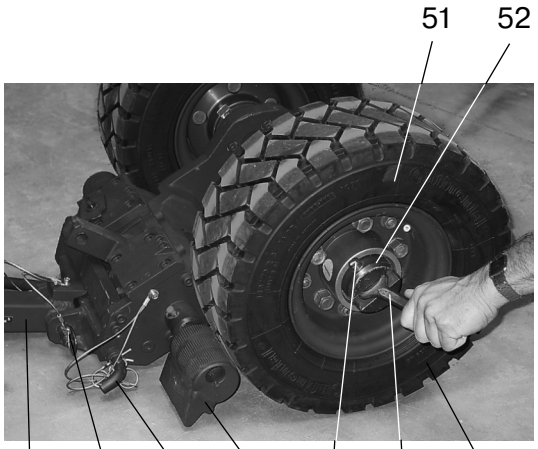
Before fitting, check the tyre pressure.
Tyre pressure 6 bar for a speed of 6 km/h and loading into the aircraft.
Tyre pressure 10 bar for a speed of more than 6 km/h, max. 16 km/h.
All sets of wheels are interchangeable.

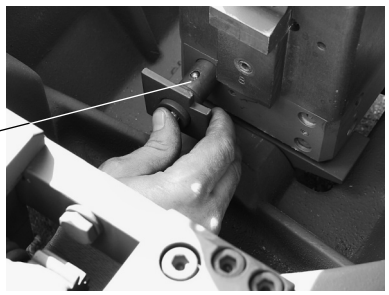
- Position the wheels (51) onto the hub (52) so that a positive fit of the wheel driver is guaranteed.
- With the a/f 24 spanner (31), unscrew and tighten the bolt (53) that secures the wheel.
- Fit the steering lever (21) on the wheel unit (10), pin with the bolt (54) and secure with the linchpin.
- Release the brake (55) by lifting the steering lever (21) and pin with the bolt (56). This renders the brake (55) inactive.
- Lift the rack (3 / 5 + 4 / 6) with the crankcase approximately 150 mm.
- Roll the wheel unit (10) under the rack (3 / 5 + 4 / 6) and position it.
- Rotate the rack (3 / 5 + 4 / 6) with the crankcase (12) downwards until the vertical journal (57) of the wheel unit (10) has entered the rack (3 / 5 + 4 / 6).
- Connect the set of wheels (10) and the rack (3 / 5 + 4 / 6) with the bolt (58). The position of the bolt is acknowledged and held by a ball catch.

Fit the other sets of wheels (10) in the same way.



a = top holder; b = bottom holder





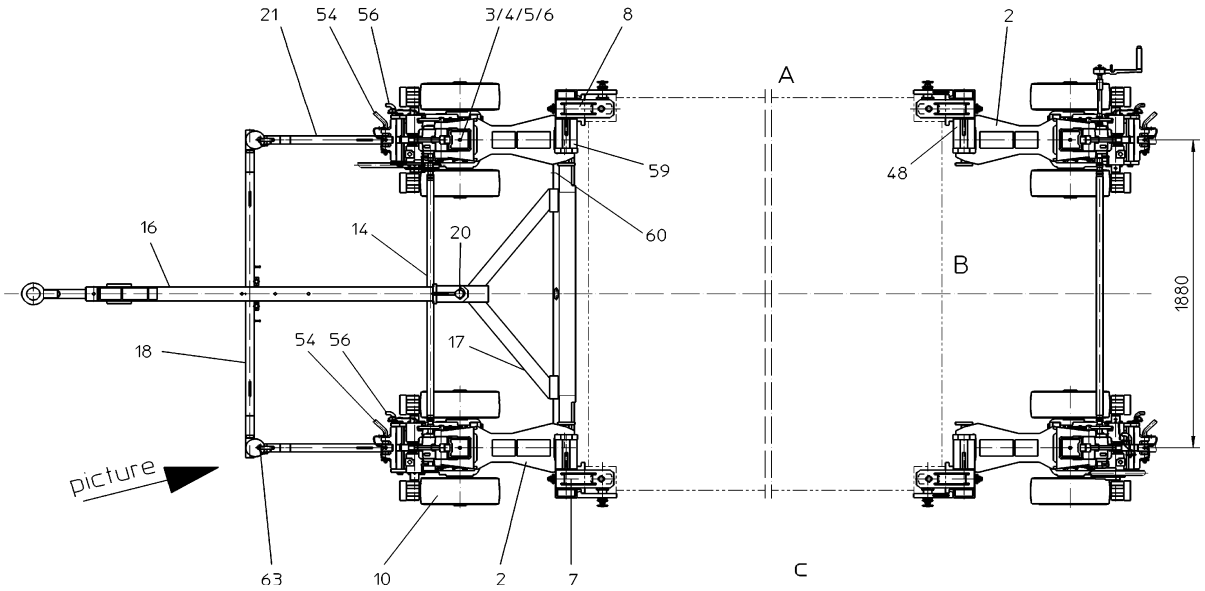
B.2. Basic structure, rolling

Additional parts must be fitted to the basic structure B.1 for rolling between the carrier vehicle and the aircraft.

Attention:

If the rolling distance to the aircraft longer than 50 m and / or if the cabin is not aligned with the aircraft, only rolling in a narrow track set-up is permissible. (In the case of wide-track operation, the bars and set pf wheels are fitted on the longitudinal side of the cabin , see Page 21).

B.2.1 Fitting the two-wheel caster assembly



A = longitudinal side; B = front side; c = narrow track operation

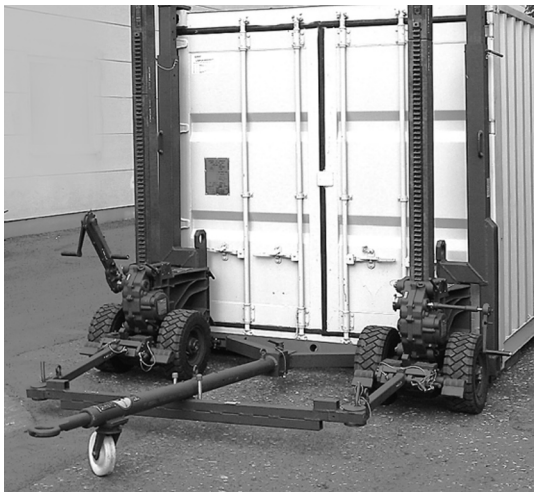
Original state

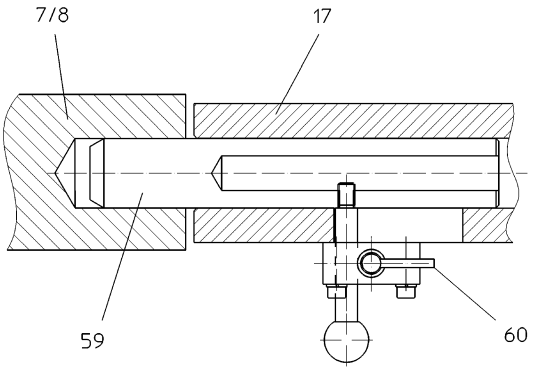
The booms (2) are fitted on the bars (7 / 8) in the rolling track (wheel center spacing 1880 mm, corresponding to the reinforced rolling track in the aircraft). Likewise the rack (3 / 5 + 4 / 6), gear unit (1) and wheel unit (10).

The brakes on all four sets of wheels (10) are not active.

The bolt (56) is pushed in.

- Fit the steering lever (21) to the sets of wheels (10), pin with the bolt (54) and secure with the linchpin.
- Insert the cross bar (17) between the bars (7 / 8), push the bolt (59) into the bars (7 / 8) and secure with the lock.
- Push the center part (16) onto the cross bar (17), pin with the bolt (20) and secure with the spring connector.
- Connect the brace (18) to the steering lever (21), pin with the bolt (63) and secure with the linchpin.





B.3. Basic structure – loading via the inclined ramp

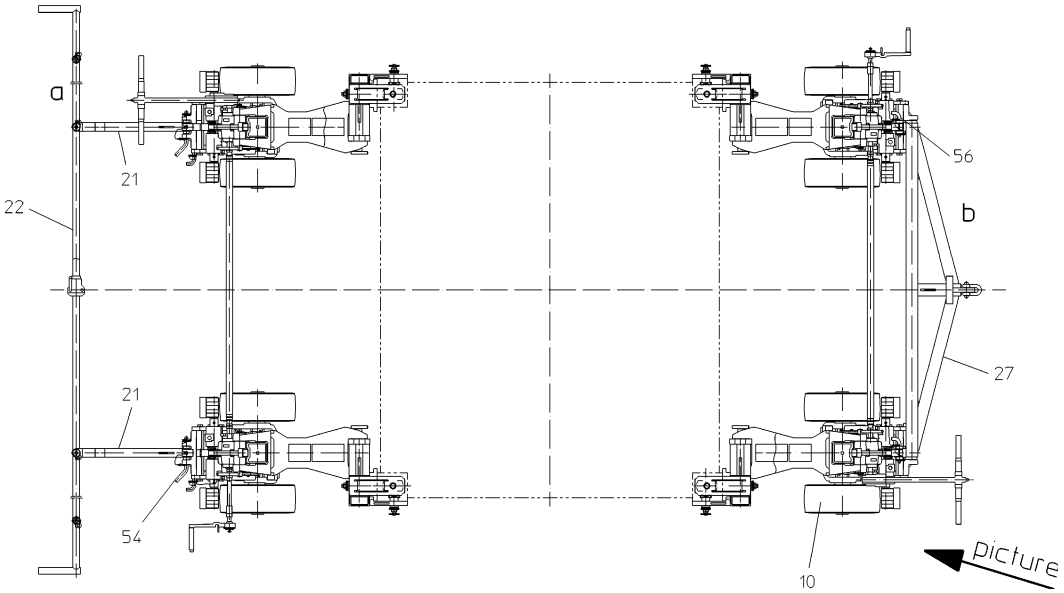
So that the cabin can be safely rolled into the aircraft, additional parts must be fitted to the basic structure described under B.1.

The illustrations shown on Page 20 apply.

The tow bar (27) is only used for rolling via the aircraft's inclined ramp.
The automatic brake of the set of wheels is activated with the tow bar. This ensures that in the event of a cable breakage in the aircraft's on-board cable winch, the cabin does not roll back on the inclined ramp.
For safety reasons, the bolt (56) assumes two functions:

- Inactive brake: Brake (55) pinned with bolt (56).
- Active brake: Bolt (56) connects the tow bar (27) with the set of wheels (10). The cable breakage brake is active when the tow bar (27) is fitted.

B.3.1 Fitting the tow bar and the (after-) two-wheel caster assembly



a = (after-) steering rod; b = tow bar

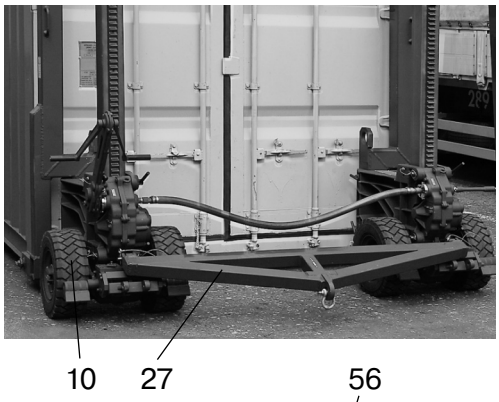
Tow bar:

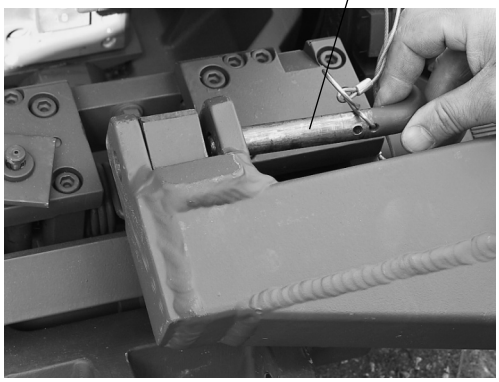
- Insert the tow bar (27) between the wheel unit (10).
- Pin with the bolt (56) and secure with a spring connector

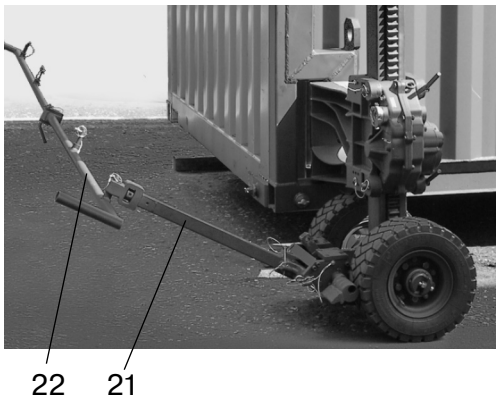
(after-)steering rod

- Attach the steering lever (21) to the wheel unit (10) and connect with the bolt (54). Secure with the linchpin.
- Attach the steering rod (22) on the steering lever (21) and secure with the linchpin.

The steering levers (21) are designed so that the stand upright at the operator's level after they are attached to the wheel unit (10). The brakes remain out of action on the after-steering rod side. The bolt (56) is inserted into the wheel unit (10).







B.4 Basic structure – loading via the horizontal ramp

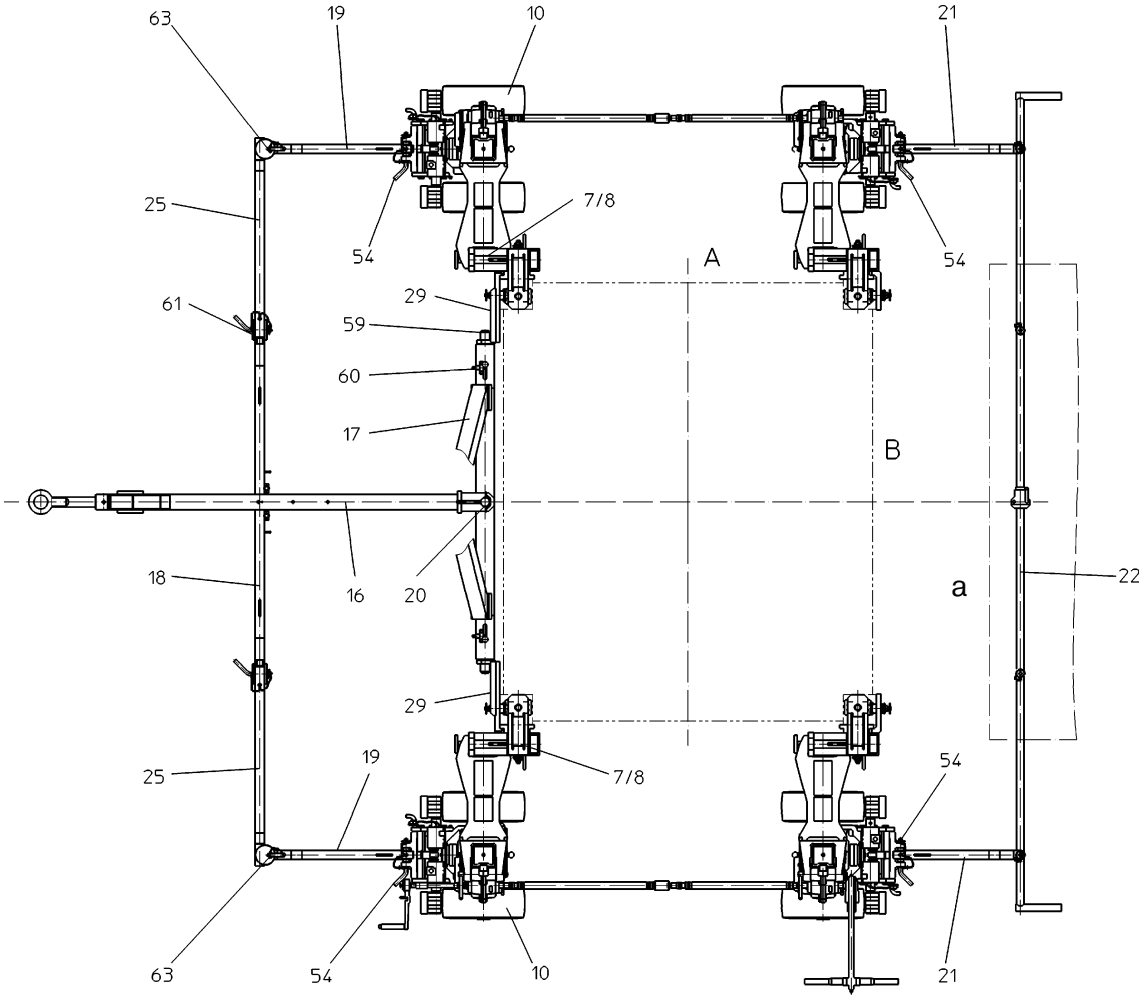
So that the cabin can be rolled on and via the horizontal ramp so that it can be safely placed down on the roller ways of the ramp, it is necessary to pay attention to the following.

– B.1.1.1 Fitting the bars under special conditions
Wide-track rollers when loading via the horizontal aircraft ramp.

– B.1.2 Fitting booms, racks and gear units

– B.1.3 Fitting the wheel unit

B.4.1 Fitting the two-wheel caster assembly and the steering rod



a = ramp side

This installation method enables wide-track rolling.

Attention:

Wide-track rolling:

- The rolling distance is max. 50m for loading over the horizontal ramp.
- The cabin is aligned to the aircraft axis so that only slight steering angles / slight direction corrections are required.

Two-wheel caster assembly:

- Fit the steering lever (19) on the set of wheels (10), pin with the bolt (54) and secure with the linchpin.
- Insert the cross bar (17) vertically between the retaining console (29), push the bolt (59) into the retaining console (29) and secure with the lock (60).
- Push the center part (16) onto the cross bar (17), pin with the bolt (20) and secure with the spring connector. Pin in the long part of the cross bar.
- Attach the brace (18) under the center part (16) and secure with the spring connector. Attach the brace extension (25) on the brace (18), pin with the bolt (61) and secure with the linchpin.
- Connect the brace extension (25) to the steering lever (19), pin with the bolt (61) and secure with the linchpin.

Steering rod:

- Fit the steering lever (21) on the set of wheels (10), pin with the bolt (54) and secure with the linchpin.
- Attach the steering rod (22) on the steering lever (21) and secure with the linchpin.

B.5 Fitting the operating parts

B.5.1 Connecting shaft (14 / 15)

The connecting shafts connect two supports. This enables two-man operation.

It consists of two parts:

1. The short part (14), which has two external squares on the end. This connecting shaft (14) is used for rolling (narrow track)
2. The extension (15), a long part with a coupling piece.

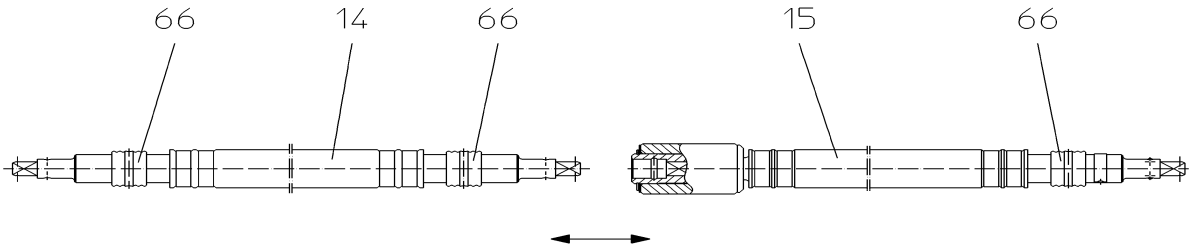
The parts 14 / 15 connected produce a long connecting shaft that is used for setting down on the longitudinal side of the cabin.

Fitting:

- By pulling or pushing the grooved sleeve (66) just behind the external square of the connecting shafts (14 / 15), it is possible to insert the connecting shafts into the inner square of the gear unit (1), the crankcase (12) and connecting shaft.

Attention:

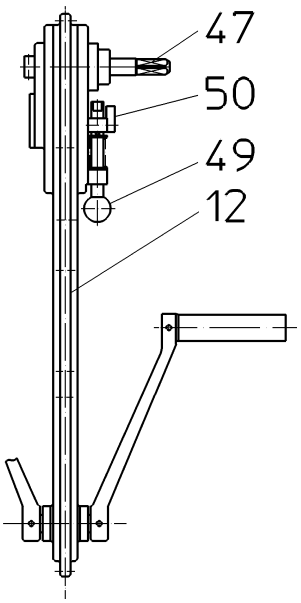
Check the axial safeguard during every use (by pulling manually).



Connect both parts to get a long connection shaft.

B.5.2 Crankcase

The crankcase (12) enables two-hand cranking and adjustment of the crank height to suit the body.



Fitting:

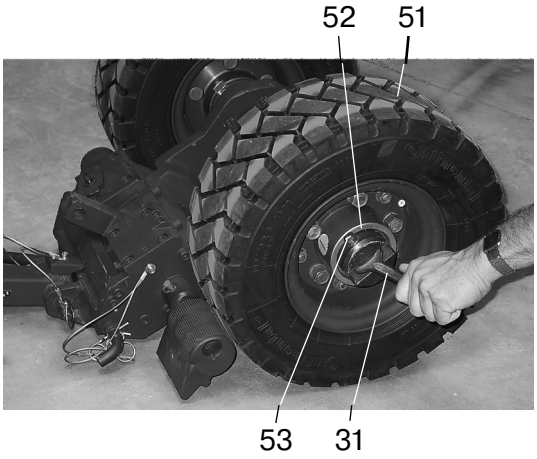
- Hold the crankcase (12) horizontally.
- Guide the square pin (47) of the crankcase (12) into the latching disk of the gear unit (1).
- By slowly turning the crank, allow the square pin (47) of the crankcase (12) to engage in the inner square of the gear unit (1).
- Pull the crankcase (12) ball head (49) of the bolt against the spring and hold.
- Press the crankcase (12) further onto the gear unit (1) until the stop (hook, 50) is behind the latching disk. Swivel the crankcase into the desired position and lock it by releasing the bolt.

B.5.3 Wheel units / wheels

The wheels (51) of the wheel unit (10) can be individually removed from the wheel unit (10).

Removal:

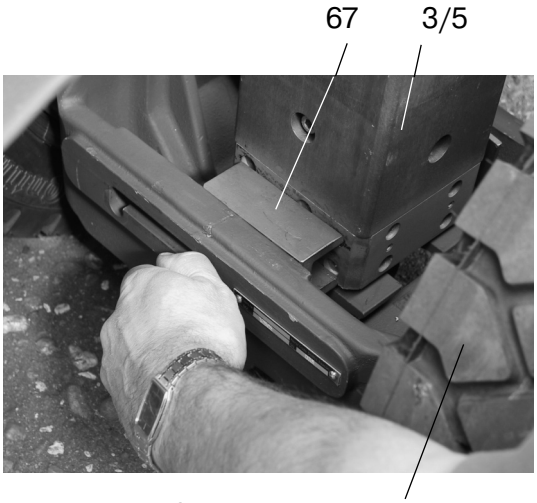
- Use the open-ended spanner a/f 24 (31) to undo and replace the screws (53).
- Pull the wheel (51) with its rim and flange off the hub (52).



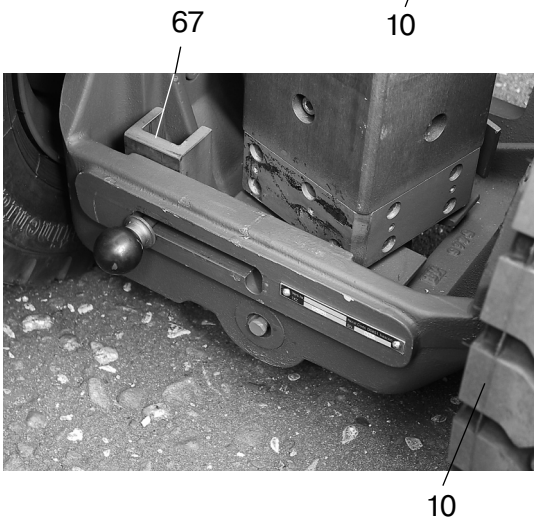
B.5.4 Rotation blockage / wheel unit

In various individual cases, the rotation of rotatable wheel units (10) must be blocked to produce rigid wheel units (10).

- Push the lock (67) parallel to the rack tube (3 / 5). The steering is blocked.

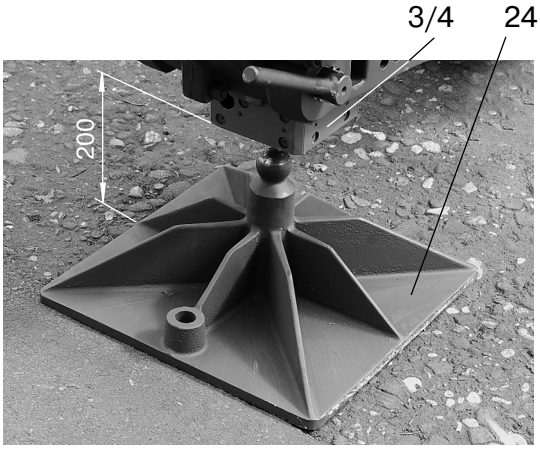


If the lock (67) remains in the parking position, the wheel unit (10) can be steered.



B.5.5 Base plate

- Lift the racks (3 / 4) approx. 200 mm off the floor.
- Position the base plate (24) centrally below the opening of the rack ends (3 / 4).
- Lower the rack (3 / 4) onto the ball support of the base plate (24).



C Use

C.1 Instructions for loading and unloading the carrier vehicle

To load and unload the cabins, the carrier vehicle must be on a level and firm surface (runway, concrete surface).

Attention:

Loading and unloading are carried out with the sets of wheels (10) (Figure 24). The brakes (55) are activated on all four sets of wheels (10). The rotation of the sets of wheels (10) is blocked. It is not permissible for the cabins to remain on the sets of wheels for long periods. If a longer standing time is required, remove the sets of wheels (10) and fit the base plate (24).

C.1.1 Unloading onto the ground / at rolling height

Lowering the cabin

– Basic structure:

B.1 = Basic structure loading and unloading the carrier vehicle.
B.1.1 = Fitting the bars
B.1.1.1 Fitting under special conditions
– When the cabins are close one behind the other.
– When the cabin is on the truck near to the tailgate.
– During wide-track rolling when loading is being carried out via the horizontal aircraft ramp.
B.1.2 Fitting boom, rack and gear unit
B.1.3 = Fitting the wheel unit
B.5 Fitting the control parts

Ensure:

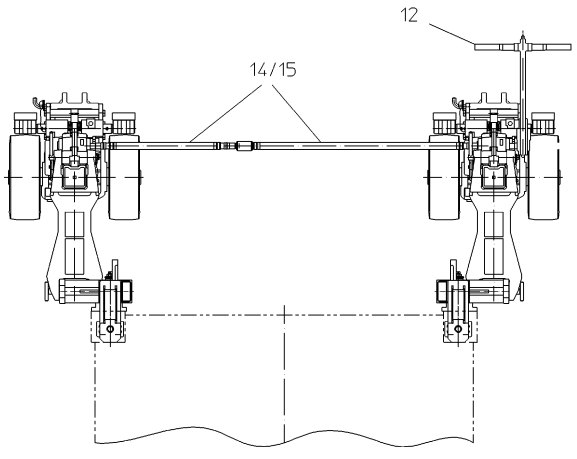
Tyre pressure 6 bar for a speed up to 6 km/h and loading into the aircraft.
Tyre pressure 10 bar for a speed of more than 6 km/h, max. 16 km/h.
Loading and unloading is possible for both, 6 and 10 bar.
The cabin is detached from the carrier vehicle.

Attention:

When all four corner units are brought into contact with the ground and the cabin has been slightly raised off the carrier vehicle, the contact surface of all tyres must be of equal size. Ensure that the load on all four corner units is approximately the same.

- Attach the crankcase (12) to the gear unit (1) ⇒ B.5.2 Crankcase
- Crank individually on all four corner units until the sets of wheels (10) make contact with the ground.
- Continue cranking with the crankcase (12) until the crank pressure increases noticeably and the wheels of the set of wheels (10) flatten slightly.
- Attach the extended connecting shaft (14 / 15) to the gear unit (1) and crankcase (12). ⇒ B.5.1 Connecting shaft
- Lift the cabin by cranking with the crankcase (12) until the carrier vehicle is free.
- Carefully drive the carrier vehicle forwards (guide in).

Setting down
2 supports connected on the longitudinal side
2-man operation (visual contact)



Attention:

Impacting against the lifting, rolling and loading system can cause toppling over.

- Bring the cabin into the horizontal position and lower it onto the ground.

Attention:

Avoid cabin vibrations e.g. by rhythmical cranking. Ensure that the cabin is lowered evenly.

- Lower the cabin to rolling height. The rolling height has been reached when the distance between the cabin bottom and the rolling surface is –460 mm. Measure!

C.1.2 Loading from the ground / to rolling height

Basic structure

B.1 = Basic structure, loading and unloading the carrier vehicle.

B.1.1 = Fitting the bars

– When the cabins are close one behind the other

– When the cabin is on the truck near to the tailgate

– During wide-track rolling when loading is being carried out via the horizontal aircraft ramp.

B.1.2 Fitting boom, rack and gear unit

B.1.3 = Fitting the wheel unit

B.5 Fitting the control parts

Ensure:

Tyre pressure 6 bar for a speed up to 6 km/h and loading into the aircraft.
Tyre pressure 10 bar for a speed of more than 6 km/h, max. 16 km/h.
Loading and unloading is possible for both, 6 and 10 bar.

- Attach the crankcase (12) to the gear unit (1) ⇒ B.5.2 Crankcase
- Cranking individually with the crankcase (12) until the crank pressure increases noticeably and the wheels of the set of wheels (10) flatten slightly.

Attention:

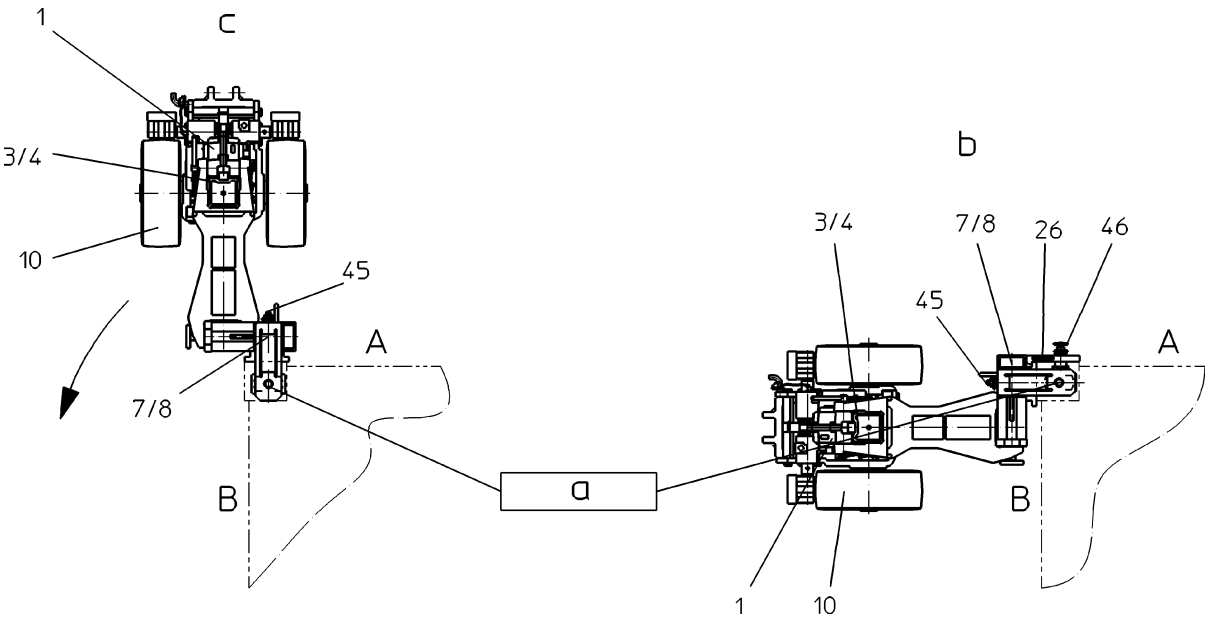
When all four corner units are brought into contact with the ground, the contact surface of all tyres must be of equal size.
Ensure that the load on all four corner units is approximately the same.

- Attach the extended connecting shaft (14 / 15) to the gear unit (1) and crankcase (12) ⇒ B.5.1 Connecting shaft.
- Lift the cabin about 100 mm.
- Check whether the cabin is horizontal. If necessary, remove the connecting shaft (14 / 15) and level out the cabin.
- Lift the cabin over the loading surface of the carrier vehicle.
- Carefully drive the carrier vehicle under the cabin (guide in).
- Position the support bolts of the carrier vehicle precisely under the lower openings of the metal corner mounts of the cabin.
- Lower the cabin until all four corner units of the lifting, rolling and loading system are relieved.
- Close the connection between the cabin and carrier vehicle.
- Remove the lifting, rolling and loading system (B.1.3 – B.1.1 – B.1.1.1 – B.5.1 – B.5.2, but in reverse order).

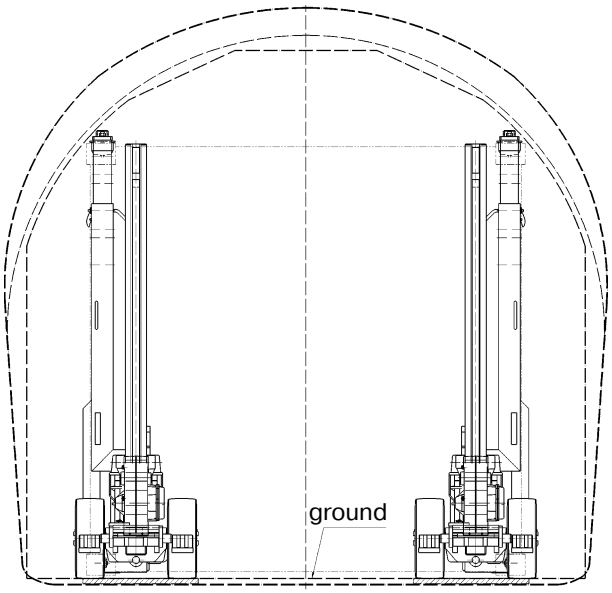
C.1.3 Swivelling the bars

This is only possible if the bars (7 / 8) are attached to the cabin in accordance with the method B.1.1.
The boom support (48) of the bars projects on the longitudinal side of the cabin.

During setting down, the bars (7 / 8) are bolted onto the longitudinal side of the cabin ⇒ B.1.1 Fitting the bars.
The attachment parts bar (7 / 8), rack (3 / 4),gear unit (1), set of wheels (10) are at right angles to the longitudinal wall of the cabin.
For rolling, bolt the bars (7 / 8) to the front side of the cabin and also secure them with the retaining bracket (26) to the longitudinal side of the cabin ⇒ Page 11 + 13.
This attachment method is advantageous for rolling the cabins into the aircraft via the inclined ramp, because in the critical free space area, the ISO corner on the top of the cabin, there is no attachment part of the lifting, rolling and loading system at the side.



a = rotation point; b = rolling; c = setting down



Changing the bars from setting down to rolling

The cabin has been set down on the ground.

- Raise the rack (3 / 4) with the crankcase (12) until the set of wheels (10) loses its grip on the ground.
- Release the bar lock (45).
- Swivel the corner unit (bar / boom / rack / gear unit / set of wheels) about the rotation point in the upper ISO corner on the front side of the cabin.
- Insert the bar lock (45) into the oval opening of the ISO corner on the front side of the cabin.

Attach the retaining bracket (26) on the ISO corner of the cabin's longitudinal side and insert the retaining bracket (46) lock into the oval opening of the ISO corner on the front side of the cabin.

- Close both locks (45 / 46).

Attention:

– B – Pay attention to the basic structure of the system, explanation of the bar lock.

– The bars (7 / 8) can be changed from setting down to the rolling direction also without the attachment parts (boom / rack / gear unit / set of wheels).

C.2 Narrow track rolling

Rolling on the runway is possible up to max. 6 km/h (sign on the boom and on the center part of the two-wheel caster assembly).

Attention:

- Max. rolling height = 460 mm / ground to lower edge of the cabin. Sign on the boom.
- Tyre pressure 6 bar for max. admissible tyre pressure and loading into the aircraft.
- Max. permissible speed 6 km/h
- When negotiating bends, pay attention to the markings for the maximum steering angle.
  If the red-marked springs tilt to the side, the permissible steering angle has been reached.
- Avoid jerky braking.
- Release all brakes for rolling, pin and thereby keep them non-functional.
- Block the sets of wheels on the cabin side not being steered to prevent them turning. No after-steering is permitted!

Rolling speed

It is allowed to roll with a speed of 16 km/h on plain and solid ground, e.g. tar or concrete. The manoeuvring area must be free of obstacles, potholes, kerbstone edges, water channels and gaps in-between concrete surfaces. It is not allowed to reduce the speed jerkily.

Attention:

If after-steering is necessary

- Max. permissible speed = walking pace < 6 km/h
- The brakes are also off on the after-steering side = pin and thereby non-functional
- After-steering with fitted steering levers (21) and steering rod (22) – no individual steering of the sets of wheels is permissible.

Applying the brake

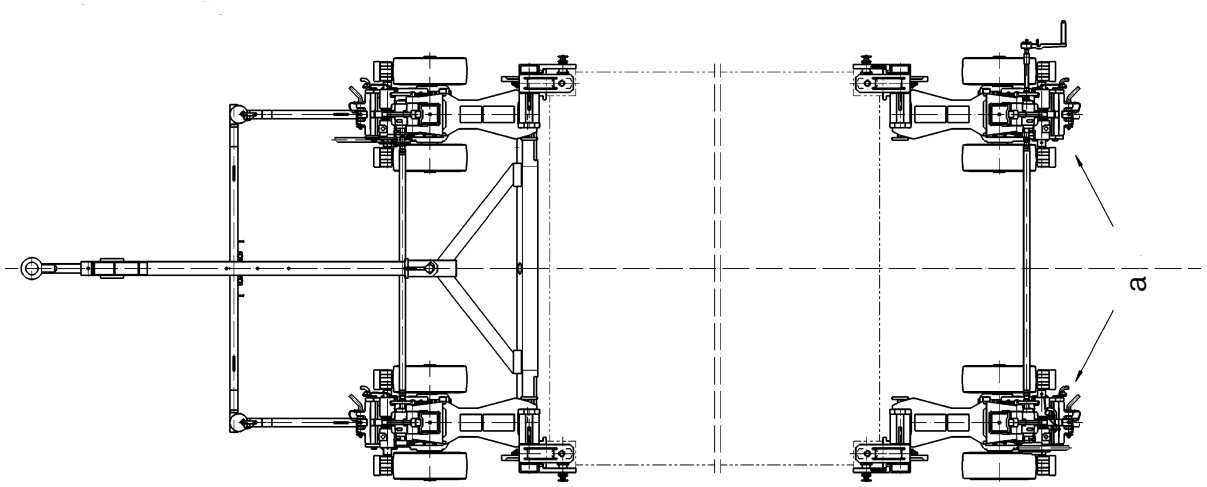
If the cabin should be in the rolling direction on sets of wheels for a short time without a tractor, the brakes on all four sets of wheels must be activated.

Attention:

On sloping ground.
Before de-coupling the tractor, pull the bolt (56) on the sets of wheels (10) with the two-wheel caster assembly (⇒ Page 17), then remove the two-wheel caster assembly.

Note:

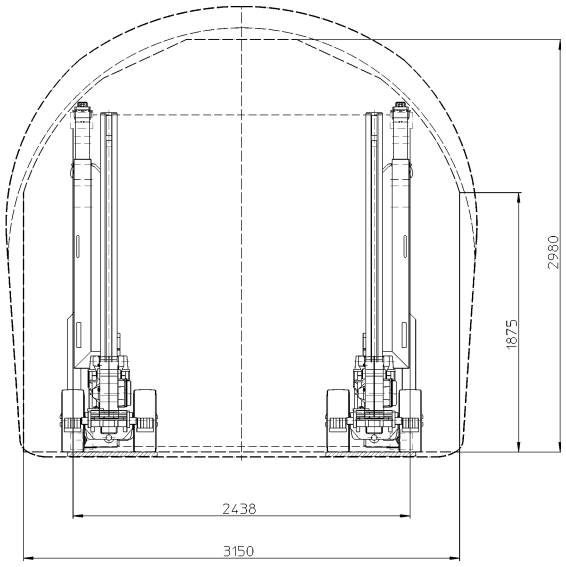
Slightly raise the brake shoes. The bolt (56) can then be pulled more easily.



two-wheel caster assembly a = sets of wheels with rotation blocked

C.3 Instructions for loading and unloading an aircraft via the inclined ramp

Position of the cabin in the transport aircraft:
The precise location depends on the center of gravity of the cabin with a load.



Transport aircraft prerequisites

- The transport aircraft is lowered to the lowest loading position and is supported. (Height at the ramp joint approx. 760 mm).
- The ramp is lowered to the ground
- There are four approx. 1200 mm long wedges.
- Ramp and aircraft floor without roller ways.
- The aircraft's own cable winch is used to pull in the cabin.
- Use deflection rollers to halve the rolling-in speed.

Attention:

The permissible ground pressure in the reinforced rolling area of the aircraft must not exceed 6 kp/cm^2.
GAF T.O. 1C-160-9 (Technical manual – Loading aircraft TRANSALL C160).
If the individual load of the support is < 4 t, this value is not exceeded ⇒ Page 38 (loading attempt with wheel unit).

C.3.1 Loading

The cabin is rolled into the rolling position until just in front of the ramp end and is aligned to the aircraft axis.

- Fitting

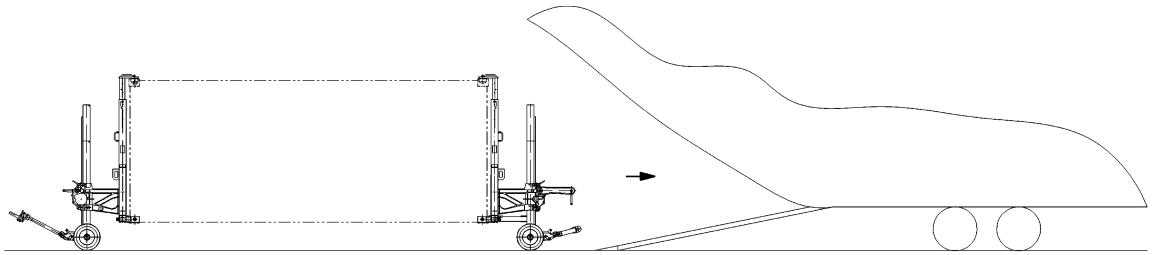
B.3 = Basic structure – loading via the inclined ramp
B.3.1 = Fitting the tow bar and the (after-) steering rod on the cab.

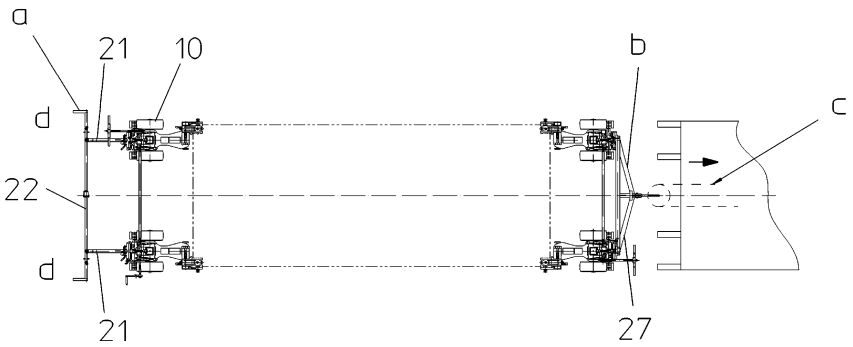
- Align the wedges to the track position of the sets of wheels (10). This must be identical to the reinforced rolling tracks in the aircraft.
- Release the brakes of the sets of wheels (10) on the steering rod (22) with the steering lever (21) and pin. Brake not active ⇒ (Page 31).
- The brakes on the sets of wheels (10) with the tow bar (27) are activated (Page 31).
- Secure the deflection roller with the cable on the tow bar (27).

Attention:

The cable must not scrape on the ramp joint.

- Lower the front cabin side with the fitted tow bar (27) until a ground clearance of min. approximately 50 mm is guaranteed.





a = steering rod; b = tow bar; c = deflection roller and cable; d = operator

Attention:

When rolling in, after-steering is possible only on the rear side of the cabin. Two operators perform after-steering on the steering rod (22) on the left and right of the cabin. The after-steering must be adjusted when the ramp joint of the cabin is reached.

- Pull up and hold the cabin over the wedge.
- Perform height adjustment on the cabin.
- Roll further on the ramp into the aircraft. If necessary, stop and adjust the cabin height.

After reaching the ramp joint, remove the steering rod (22) and block the sets of wheels to prevent rotation.

Attention:

If possible, the cabin must be rolled in horizontal.
Avoid banging the cabin and the lifting, rolling and loading system against the aircraft. Check the floor, ceiling and side clearances during the entire loading process.

Attention:

If the cabin is horizontal in the aircraft, it is possible that the brake is not released fully as the cable force diminishes (push manually).

- Release the brake with the lever (21) and hold it open.
- Roll the cabin to the mounting place in the aircraft and set it down.
- Lash down the cabin.

Attention:
Lashing down to parts of the lifting, rolling and loading system is not permissible.

Attention:

If the lifting, rolling and loading system remains in the aircraft on the cabin, the set of wheels must be turned freely. The cabin set down only on the wheels is not permissible.

C.3.2 Unloading

⇒ Page 31 ⇒ Page 32

Note:

Transport aircraft prerequisites (see C.3)

- Undo the lashes.
- Check that the tyre pressure is 6 bar.
- Secure the deflection roller with cable on the tow bar (27).
- Position the wedges at the end of the ramp to the rolling track width.
- Release and pin the brake on the sets of wheels (10) with the steering lever (21). Brakes inactive.
- The steering rod (22) can only be fitted outside the aircraft. The sets of wheels (10) are blocked on the steering rod side to prevent rotation.
- The brakes on the sets of wheels (10) with the tow bar (27) are activated.
- With the tow bar (27), release the brake on the sets of wheels and keep them released until the sets of wheels are on the inclined ramp.
- Roll the cabin onto the inclined ramp. Slacken the cable of the on-board cable winch in a controlled manner.

Attention:

For safety reasons, the winch cable must be kept taut during the entire unloading process. If the cabin is on the ramp, the brake is released and applied automatically

- Roll the cabin further out of the aircraft on the ramp. If necessary, stop and correct the height.

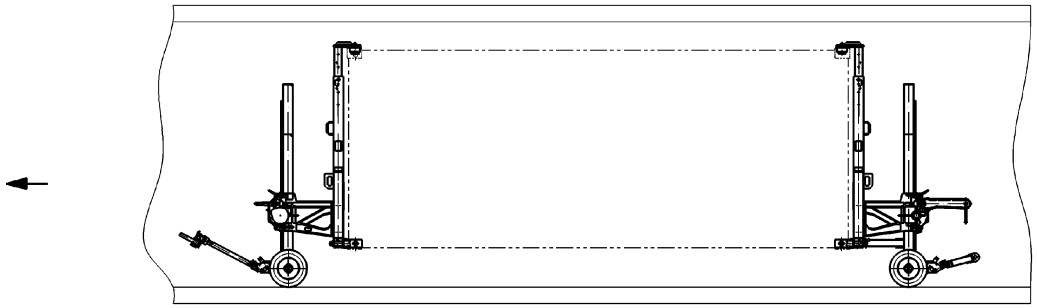
Attention:

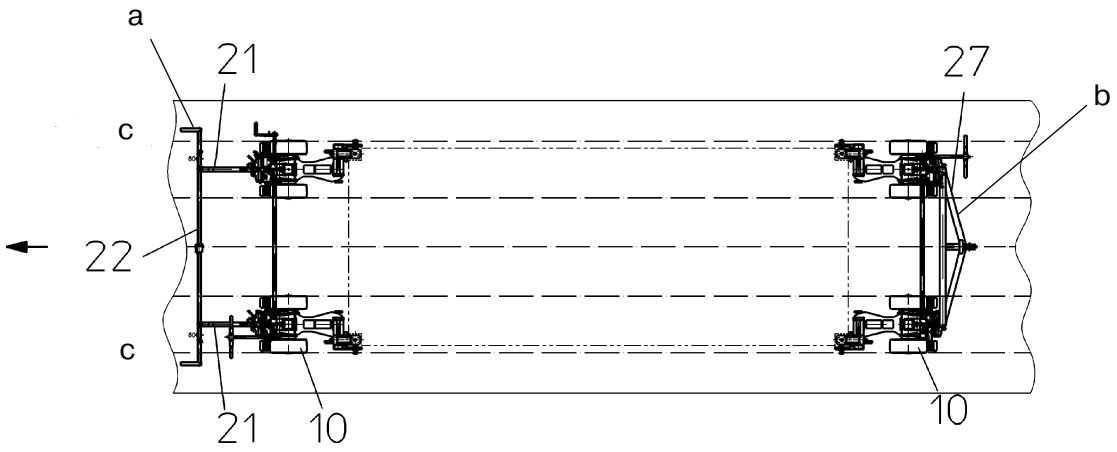
If possible, the cabin must be rolled out of the aircraft horizontally. Check the ground, ceiling and side clearances during the entire unloading process.
Prevent the cabin and the lifting, rolling and loading system from impacting against the aircraft.

- Continue rolling until all sets of wheels have left the ramp.
- Align the cabin to rolling height.
- Remove the towing fixture (27).

Keep the brakes of all four sets of wheels released (10). Brakes inactive.

- Block the rear sets of wheels to prevent them rotating (without two-wheel caster assembly) ⇒ B.5.4
- Roll the cabin to the desired location and set it down.





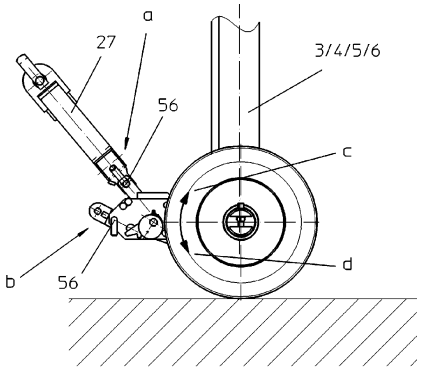
a = steering rod; b = tow bar; c = operator

C.3.3 Function of the automatic brake

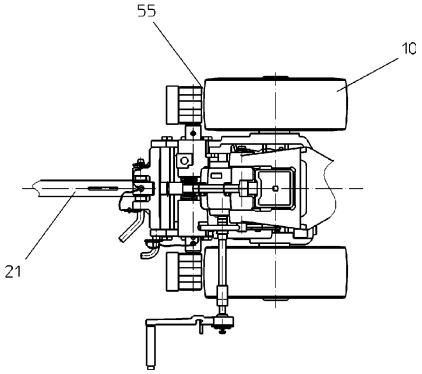
The automatic cable breakage brake is used only when loading / unloading via the inclined ramp. Each of the four identical wheel units (10) is fitted with an automatic brake (55).

The automatic brake is **functioning**:

- When rolling the cabin over the inclined aircraft ramp, on the sets of wheels with the tow bar (27) and on-board winch cable attached.
- When setting down on the sets of wheels for brief periods. The automatic brake **is not functioning**:
- When rolling the cabin over the inclined aircraft ramp, on the support side with the steering rod.
- When rolling the cabin in front of the aircraft on all four wheel units (10).
- During wide-track rolling = rolling over the horizontal ramp.



a = holder, top ; b = holder, bottom
c = tightening brake ; d = release brake



Attention:

When the lifting, rolling and loading system is on level ground with the cabin raised, the brakes (functioning) act on the front or rear wheel units, depending on the rolling direction. All other operating parts (two-wheel caster assembly) must be removed form the set of wheels.

Attention:

The cabin can be set down on the sets of wheels on flat ground with the brakes released (brake non-functional).
On sloping ground, the brake is required on all four sets of wheels (10).

In order to achieve the operating states – **brake functional; brake non-functional**, a safeguard is installed in the sequence:

- The steering lever (21) required for after-steering can only be fitted to the bottom holder.
- The towing fixture (27) required during roiling over the inclined ramp can only be fitted on the top holder (See C 6.4 Troop maintenance). The tow bar (27) can only be pinned onto the top holder with the bolt (56). The brake is functional.
- The brake is pinned and kept non-functional with the bolt (56).

This measure guarantees that the brake is functional during rolling across the inclined aircraft ramp, and that the parts steering lever (21) and towing fixture (27) cannot be fitted incorrectly.

Attention:

Before every use:

- Check the tyre pressure 6 bar.
- Inspect the function of the automatic brake (cable breakage safeguard). (See C 6.4 Brake adjustment).

After the bolt (56) is pulled, the eccentric must be movable.
After a cable breakage of the on-board cable winch:

Attention:

- Check the wheels (pay attention to the air pressure and any damage to the tyres) and replace if necessary.
- Check the function of the automatic brake. (See C 6.4 Brake adjustment)

C.4 Instructions for loading / unloading an aircraft via the horizontal ramp

The cabin is rolled via the on-board roller ways to the location in the aircraft. The precise location in the aircraft depends on the center of gravity of the cabin with the load.

Transport aircraft prerequisites

- The transport aircraft is lowered to the lowest loading position and is supported.
- The ramp is flush with the aircraft floor.
- The ramp is supported if necessary.
- The ramp and aircraft floor have roller ways.
- The aircraft's own cable winch is used to pull in the cabin.
- A deflection roller should be used to halve the rolling-in speed.

Attention:

Attention must be paid to the permissible load of the roller ways. See:
GAF T.O. IC-160-9 (Technical manual – Loading the aircraft TRANSALL C - 160).

Cabin prerequisites

- The floor of the cabin must be rollable. Flight pallets can also be used in the case of lower cabins.
- The cabin may only be so long that it does not touch the narrowing upper rear part of the aircraft's fuselage when being raised horizontally ⇒ Page 36

Rolling prerequisites

Rolling distance to the aircraft < 50 mm
- Wide-track fitting of the lifting, rolling and loading system (Page 35)
- The cabin is aligned to the aircraft's axis.

Rolling distance to the aircraft > 50 m
- Narrow-track fitting of the lifting, rolling and loading system (Page 29)

Attention:

So that the C.4.1 Loading procedure can be carried out, the following work steps must also be carried out for wide-track operation after rolling the cabin up to the horizontal aircraft ramp:

- Replace corner units near to the aircraft on the front side and fit in the wide-track position. (See B 1.1.1)
- Remove the rack extension. (See B 1.2)
- Swivel corner units facing away from the aircraft on the front side into the wide track and mount.
- Lift all four corner units and ensure even load distribution (tyres flatten out).
- Fit the connecting shafts.
- Raise the cabin over the horizontal ramp.

C.4.1 Loading

Before rolling up to the aircraft ramp, on the side facing the aircraft it is necessary to remove the rack extension according to the aircraft type (see B 1.2 + picture page 36). The cabin is now pushed via the two-wheel caster assembly until it is close to the aircraft ramp.

Fitting:

B.4 Basic structure – loading via the horizontal ramp
B.4.1 Fitting the two-wheel caster assembly and the steering rod.

When pushing the cabin into position, the sets of wheels (10) on the side facing away from the two-wheel caster assembly can be blocked to prevent rotation. If positional correction of the cabin is required, the connected sets of wheels (10) can be steered via the steering lever (21) and the steering rod (22). ⇒ Page 35.

Attention:

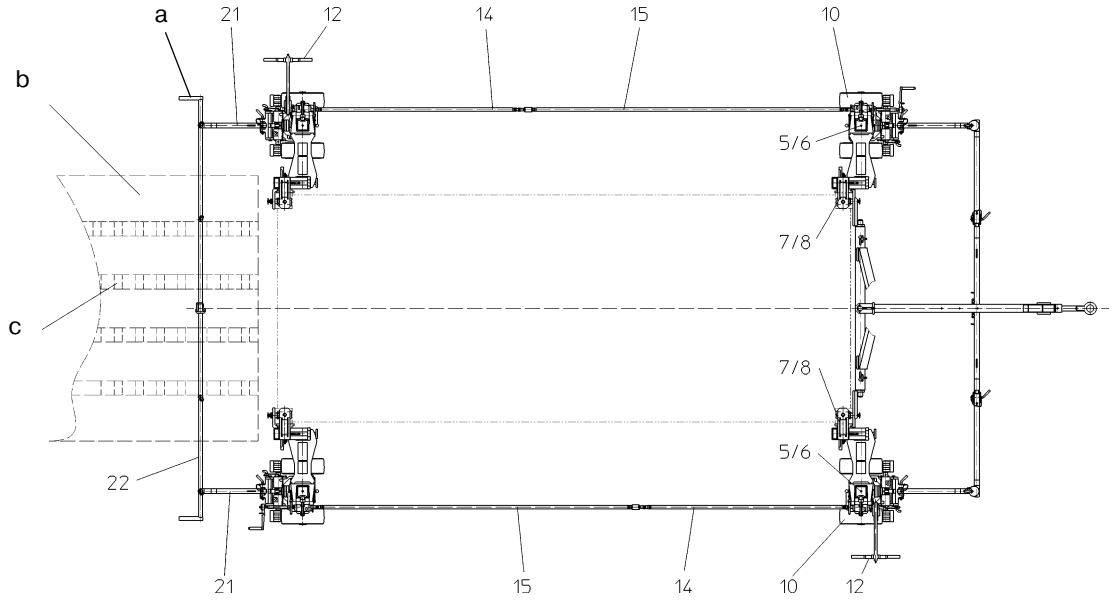
Risk of collision between operator and material in the vicinity of the aircraft ramp.
The cabin is pushed up to about 100 mm away from the ramp end. The brakes are released on all sets of wheels (10). Brake function not active. The sets of wheels (10) in the vicinity of the aircraft ramp are blocked to prevent rotation. The connecting shafts (14 / 15) and crankcase (12) are fitted.

- With the crankcase (12), raise the cabin until the aircraft ramp can be safely rolled over.

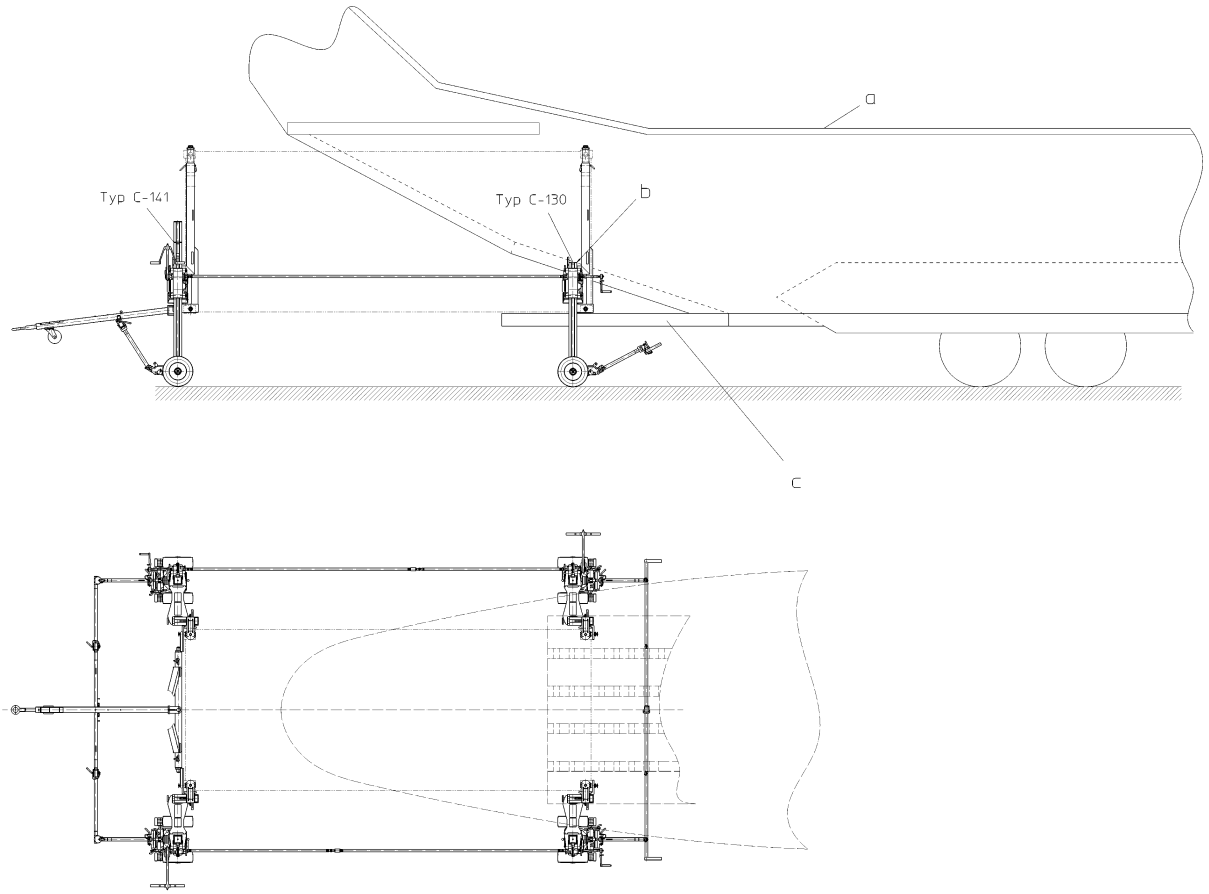
The cabin can be rolled further across the ramp manually.
Alternatively, the aircraft's cable winch can be used to secure the deflection roller with the cable to the bar (7 / 8).

Attention:

- Roll in slowly.
- The roll-in distance up until the corner units near to the aircraft are removed is very short.
- During rolling-in, the booms (2) enter the angular opening between the bottom of the ramp and the aircraft's fuselage profile ⇒ Page 36



a = steering rod; b = aircraft ramp; c = roller way



a = fuselage profile; b = rack extension C-130 is removed; c = ramp bottom

- Avoid impacting against parts of the aircraft.
- Set down the cabin on the roller ways of the ramp by cranking.
- Remove the connecting shafts (14 / 15).
- Remove the corner units near to the aircraft (bars / boo / gear unit / racks / set of wheels).
- Roll in the cabin on the roller ways of the ramp so that the corner units still fitted to the cabin do not impact against the aircraft.
- Remove the two-wheel caster assembly and the rear corner unit.
- Roll the cabin to its location in the aircraft.
- Lash down the cabin securely.

Note:

The lifting, rolling and loading unit can be supplied stowed in crates or on flight pallets.
The stowage crate is not part of the scope of delivery.

C.4.2 Unloading

⇒ Page 35 ⇒ Page 36

- Undo the lashing
- Secure the deflection roller to the bars (7/8) with cable.

Attention:

When rolling out the cabin, the safeguard against the cabin accidentally rolling away is the on-board aircraft winch cable.

- Roll out the cabin on the roller way until the two rear corner units (bar / boom / rack / gear unit / set of wheels) can be fitted.
- Fit the parts of the corner units. The brakes are released and pinned on the sets of wheels. Brakes out of action. Wheel unit blocked to prevent rotation.
- With the crankcase (12), raise the set of wheels (10) of the fitted corner units sufficiently so that they take the load as rolling continues.

Attention:

The rollers of the roller ways must support the load during rolling-out. If necessary, adjust the heights with the crankcase (12).

- Continue rolling out until the next two corner units can be fitted.
- Fit the corner units. Sets of wheels blocked to prevent rotation
- Turn the corner units with the crankcase until all four corner units are supporting approximately equal loads. Ensure that the contact surfaces of the tyres are equal .
- Fit the connecting shafts (14 / 15) on the left and right of the cabin.
- Raise the cabin with the crankcase (12) until the roller ways of the aircraft ramp are free.

Attention:

Avoid impacting against the aircraft!

- Remove the cable and the deflection roller of the on-board cable winch.
- Continue rolling until just before the end of the ramp.
- Lower to a rolling height of 460 mm.
- Fit the two-wheel caster assembly.
- Roll the cabin away from the aircraft.

Attention:

A longer rolling distance requires changeover to narrow-track operation.

C.4.3 Loading trials, wheel units

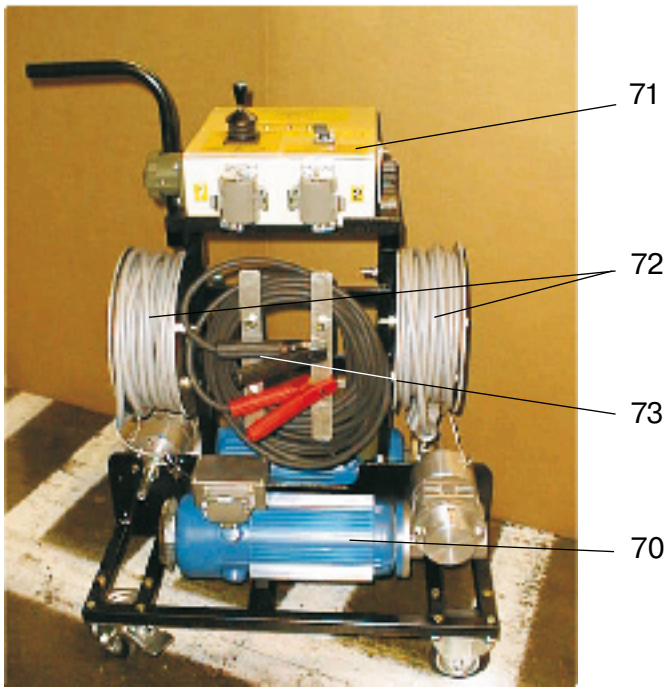
Loading test of the wheel units at 6 bar (tyre size: 180 x 70 R8 IC 70)			
	Total load	3500 kg	4000 kg
Wheel 1	Sinking dimension [mm]	37,00	42,00
	Floor area [cm^2]	295,20	333,60
	Surface pressing [kg/cm^2]	5,93	6,00
Wheel 2	Sinking dimension [mm]	37,00	42,00
	Floor area [cm^2]	303,60	333,65
	Surface pressing [kg/cm^2]	5,76	5,99

	180 / 70 R8 IC 70
Measured tyre diameter: [mm]	451.0
Measured tyre width: [mm]	172.0
Measured profile width: [mm]	162.5
Measured wheel spacing, outside: [mm]	697.0

C.5 Electric drive

C.5.1 General

The electric drive consists of a mobile cart on which the switch box (71), the two drive cables (72), the power cable (73) and the two gear motors (70) are mounted.
This reduces the cycle time.



Switch box

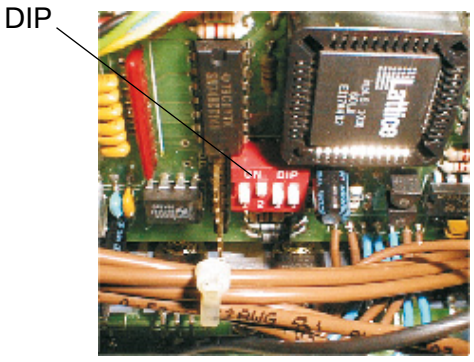
Each motor has its own fuse.
To protect the semi-conductors these fuses must only be replaced with equivalent types.

– 10 x 38 mm, 25 A, GOULD series aM for motor circuits - rated voltage 500 V, 120 kA switch rating.

The fuses for the limit switches are also inside the controller, they measure 5 x 20 mm, 1 A.

The controller houses a 4-way DIP switch using which the direction of rotation of the motors can be changed if necessary.
DIP 1 turns the first motor, DIP 2 the second.

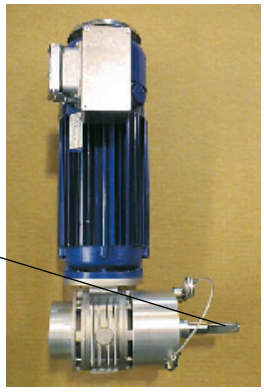
All the components in the controller are designed for operation in temperatures as low as - 32° C. Nevertheless in temperatures below -20°C before you start work with the controller you should check that the joystick can be moved easily in all direction.

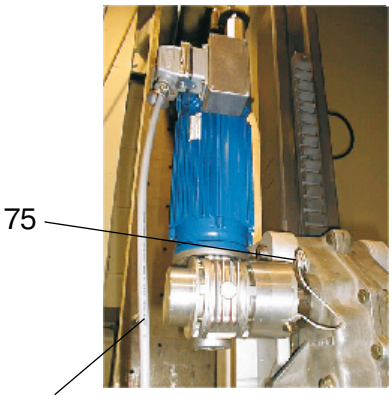


Fitting

The gear motors (70) are secured to the two diagonal corner units on which the latching disks of the gear unit (1) face outwards.

- Pull of the spring cotter (75) on the front part of the unit.
- Push the drive shaft (74) of the gear motor (70) through the latching disk of the gear unit (1).
- By swivwlling the gear motor (70), make the outer square of the gear motor (70) fit the inner square of the gear unit (1).
- Swivel the gear motor (70) until the fastening bolt is above the flattened part of the latching disk.
- Press the gear motor (70) onto the latching disk as far as it will go.
- Secure with a spring cotter (75).



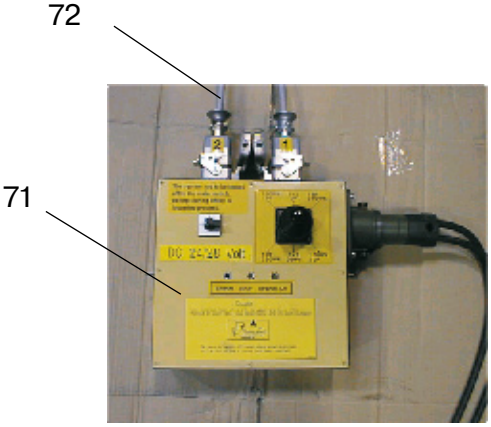


Attention:

Before putting the electric drive into operation, check that no crank (11) and / or small crankcase (12) is fitted on one of the corner units – **accident hazard!**

Preparing the electric drive

- connect the drive cable (72) to the switch box (71) and secure it.
  Attention:
  connect the drive cable „1“ to connector „1“ on the switch box (71).
  connect the drive cable „2“ to connector „2“ on the switch box (71).
- connect the drive cable to the gear motor (70) and secure it.
- Connect the power supply. When delivered, there are two cable tongs on the power supply cable (connection to the battery). Tongs can be replaced with plugs, corresponding to the existing.



C.5.2 Operating stipulations

To avoid any risk to persons and the lifting device, before you raise the container ensure that

a) the power type corresponds with that stated on the notice plates of the switch box (71) an the gear motors (70).
b) the container has been released from the carrier vehicle.
c) the lifting capacity has not been exeeded.
d) Lift the cabin with the crank (11) ot the crankcase (12) approximately 25 mm.
e) The corner units are connected to each other in pairs by connecting shafts (14 / 15) in order to guarantee synchronous lifting or lowering.

Note:

In tempreatures of less than -22 °C the gear drives should be allowed to run without a load for around two minutes.

Operating

→ Switch the main switch to "ON".
→ You can now complete the following functions using the joystick.

- Joystick up — Both supports move upwards.
- Joystick down — Both supports move downwards.
- Joystick up left — The support **‘2’** moves upwards and the support **‘1’** does not move
- Joystick up right — The right support **‘1’** moves upwards, the left support **‘2’** does not move
- Joystick down left — The support ‘**2**’ moves downwards, the support ‘**1**’ does not move
- Joystick down right — The support ‘**1**’ moves downwards, the support ‘**2**’ does not move.

The LED‘s on the control desk have the following functions.

GREEN	Activation of the electric motors If the power consumption rises to over 55 A per motor the LED will flash and the motor current will be electronically limited.
ORANGE	At least one drive cable is not connected.
RED	Excess temperature on the power section in the controller. If the green LED is also lit, the drive has suffered an overload.

Operating stipulations

In order to prevent damage to the gear motors (70), the boom (2), the gear unit (1) and the racks (3 + 5 / 4 + 6), the electric drive must not be used across the entire possible lifting range, i.e. in the upper and lower lifting range, the remaining lift must be performed manually with the crank (11) or crankcase (12).
The red dots in the rack tubes mark the lifting limit for the electric drive.

Observe the notice sign for motor stop on the boom (2)

See A.3 Technical infomation on the system

During operation, if the current voltage is too low, if the temperature is too high or if the load is too high, one or both gear motors may be swichted off.

INTERRUPT THE LIFTING OPERATION IMMEDIATELY.

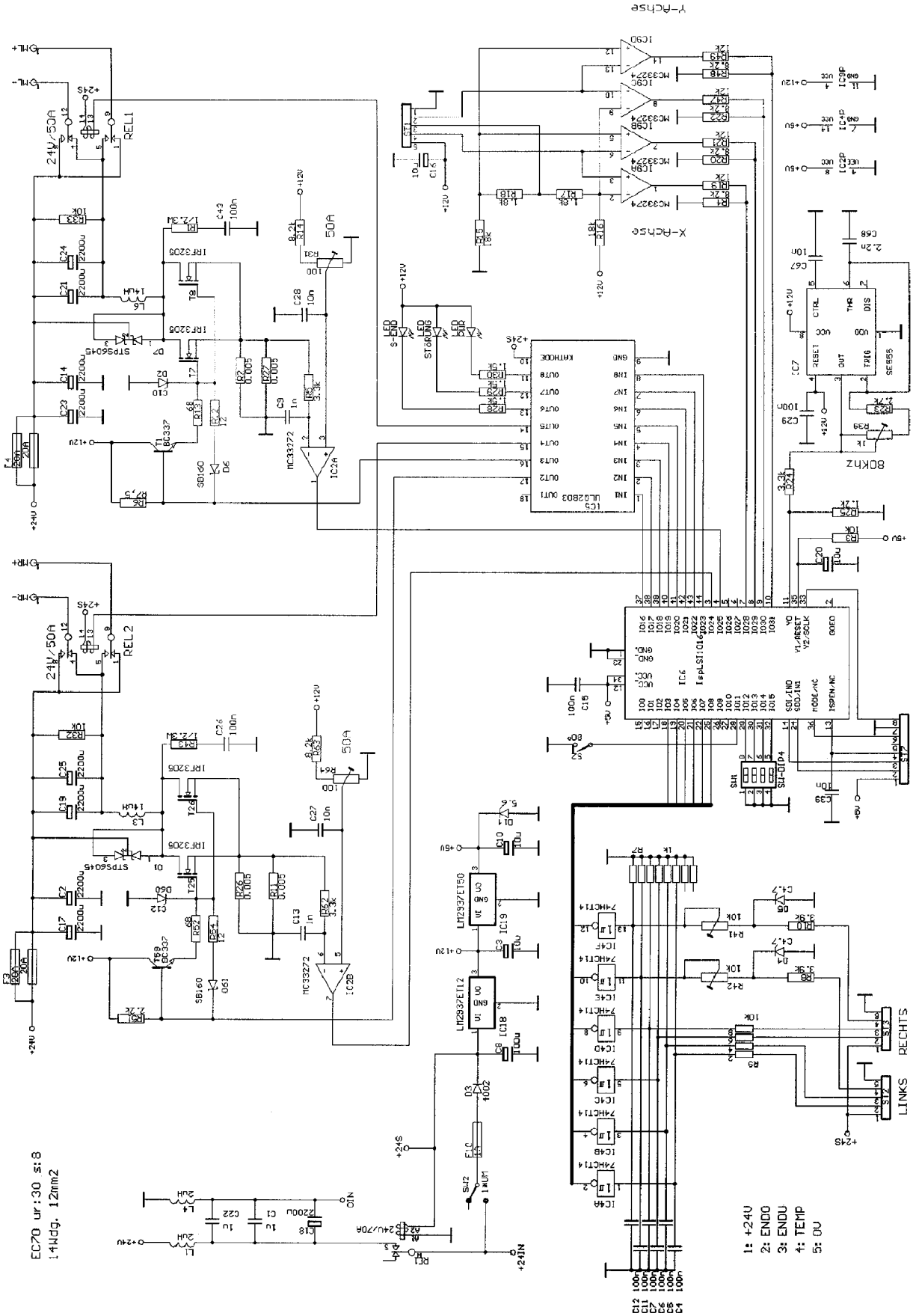
Reason:
The maximum operating temperature of the motor(s) is exceeded.

Remedy

a) Interrupt the lifting operation until the motors have cooled down (approx. 15 - 30 minutes).
b) Remove the gear motors and complete the lifting process manually ba using the crankcase.

When rasing or lowering an empty cabin, direct current electric drives can be faster and can cause the connecting shaft /14 / 15) to vibrate more. By briefly stopping the gear motors allow the connecting shaft to come to rest. Restart the gear motors.
If different drive speeds cause the cabin to be tilted by more than 1°, the cabin must be brought back into the horizontal position.
The gear motors are fitted with adjustable sliding clutches. The torque is set at the factory.

C.5.3 Electrical wiring diagramm 24 / 28 Volt, Type 1350



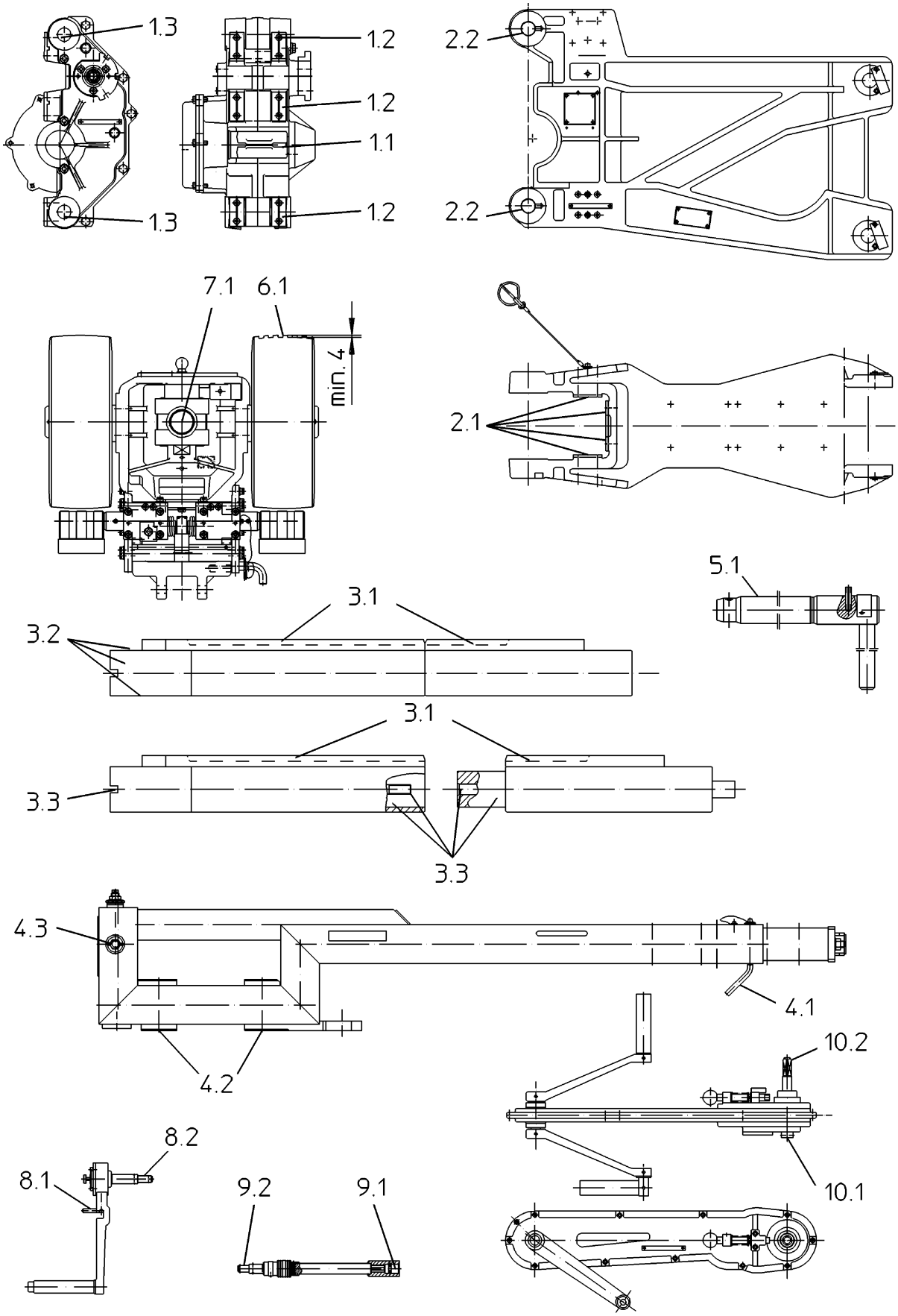
C.6 Maintenance

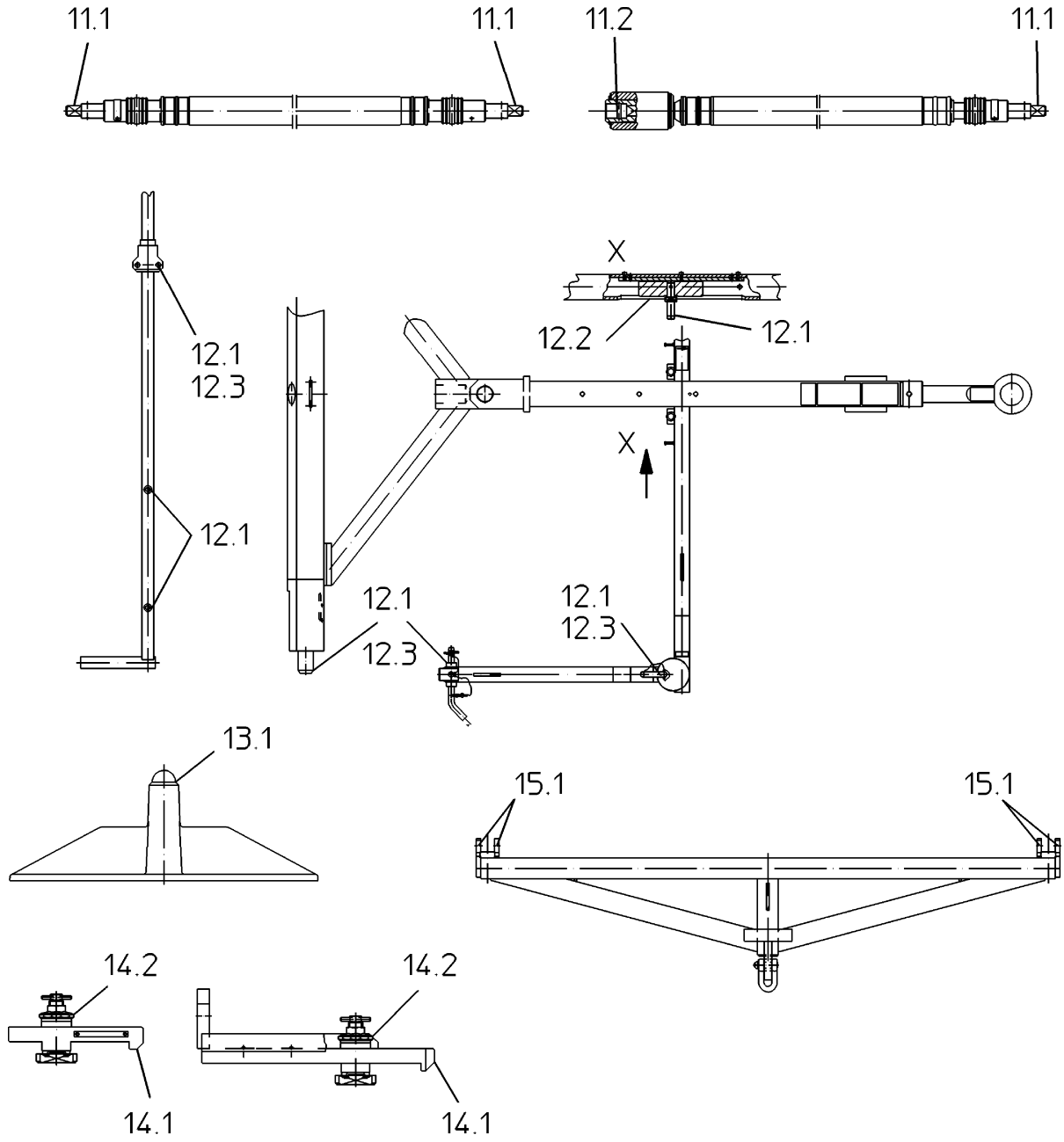
C.6.1 Care (by the user / operator, MES-1) (Ser. No. drawing page 44 + 45)

Ser. No.	Test point / Designation	Test / Activity	Qty. le	Qty. m	Qty. ri	Setpoint value Lubricant	Ref. to page	Time of the work
1	Gear unit	Clean / degrease rack pinion (1.1), sliding surfaces (1.2), bolt hole (1.3)		4		a or b		n
2	Boom	Clean / degrease sliding surfaces (2.1), bolt holes (2.2)		4		a or b		n
3	Rack	Clean / degrease teeth (3.1), guide surface (3.2), connecting points (3.3)		4		a or b		n
4	Bar	Clean / degrease bolt (4.1), hole (4.2). Clean lock bottom		4		a or b		n
5	Bolt	Clean / degrease sliding surfaces (5.1)		16		a or b		n
6	Wheel, compl.	Profile (6.1), condition, tyre pressure		8		4 mm – 6 / 10 bar		v
7	Wheel, carriage fitted	Clean / degrease rack support (7.1)		4		a or b		n
8	Crank	Clean / degrease positioning bolt (8.1), crankshaft (8.2)		2		a or b		n
9	Extension	Clean / degrease inside ((9.1) & outside square (9.2)		2		a or b		n
10	Crankcase	Clean / degrease inside square (10.1), square (10.2)		2		a or b		n
11	Connecting shaft	Clean / degrease locking (11.1) / coupling part (11.2)		4		a or b		n
12	Steering rod	Clean / degrease bolt (12.1), sliding parts (12.2), hole (12.3)		1		a or b		n
13	Base plate	Clean / degrease ball head (13.1)		4		a or b		n
14	Retaining bracket / console	Clean / degrease contact surfaces (14.1), lock (14.2)		12		a or b		n
15	Tow bar	Clean / degrease hole (15.1)		1		a or b		n

a = Gleitmo 900
b = Molycote 0321 R NATO stock number 9150-12-328-5724

n = after working; v = before working


1.3
1.2
1.2
1.1
1.2
1.3
2.2
2.2
7.1
6.1
min. 4
2.1
5.1
3.1
3.2
3.1
3.3
3.3
4.3
4.1
4.2
10.2
10.1
8.2
8.1
9.2
9.1

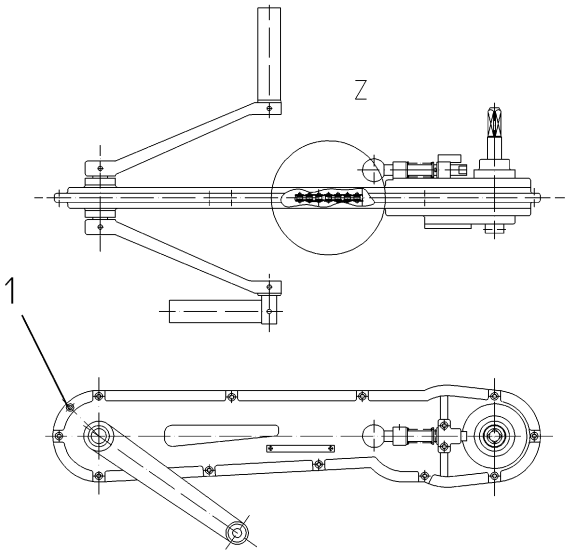

11.1
11.1
11.2
11.1
X
12.2
12.1
12.1
12.3
X
12.1
12.1
12.3
12.1
12.3
13.1
15.1
15.1
14.2
14.2
14.1
14.1

C.6.2 Lubrication (by the user / operator, MES-1) (Ser. No. drawing Page 47)

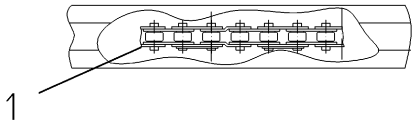
Ser. No.	Test point / Designation	Test / Activity	Qty. le	Qty. m	Qty. ri	Setpoint value, Lubricant	Ref. to page	Time of the work
1	Crankcase	Undo bolt (chain lubrication)		2		a		h
2	Rack	Grease axial bearing		4		b or c		h
3	Wheel carriage, fitted	Grease		4		b or c		h
4	Centre part, fitted	Grease		1		b or c		h

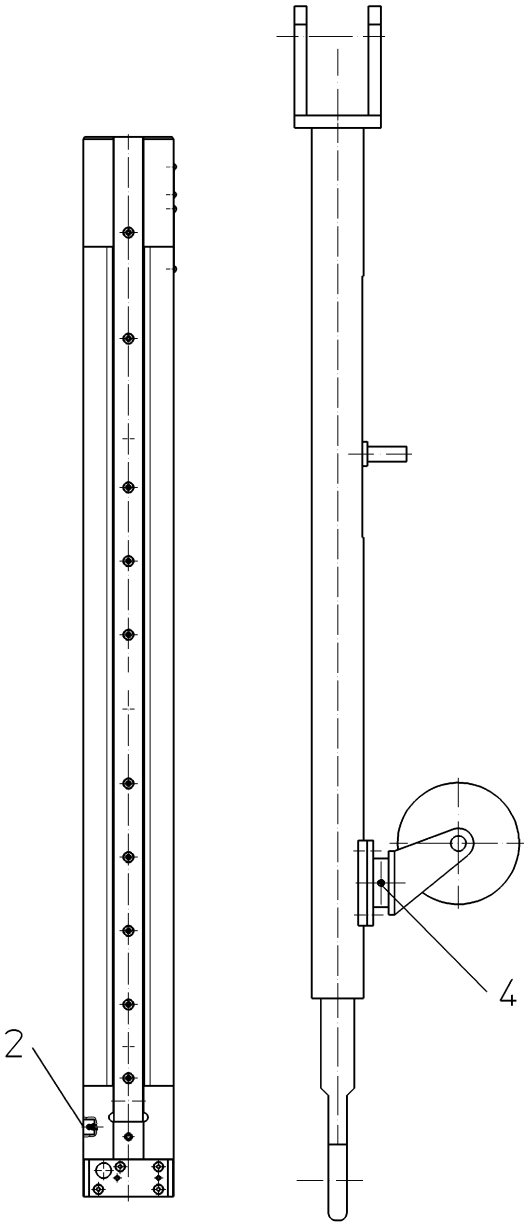
a = Shell Spirax HD 80 W or the like
b = Shell Alvania R3 with supply number: 9150-12-336-6948
c = Lithiumseifenfett K3K

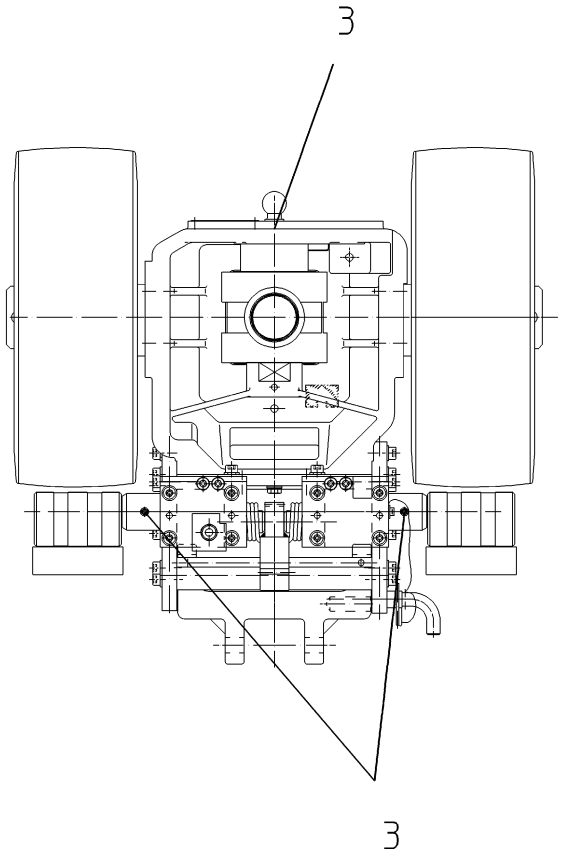
h = every 6 months



Detail Z:



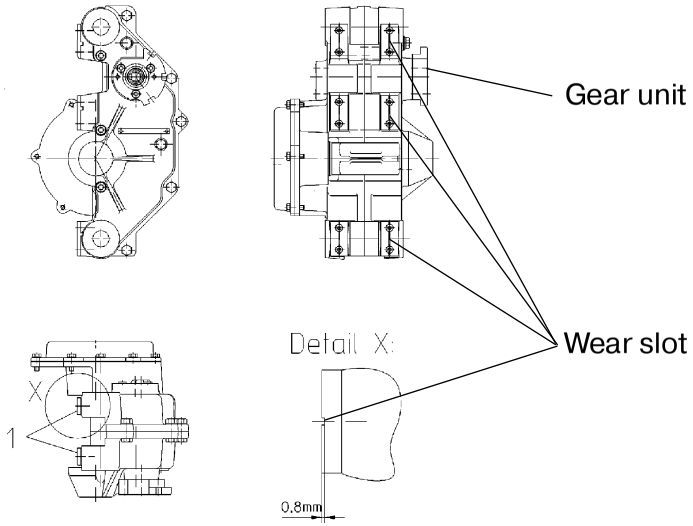




C.6.3 Scheduled work (Page 48 / 49)

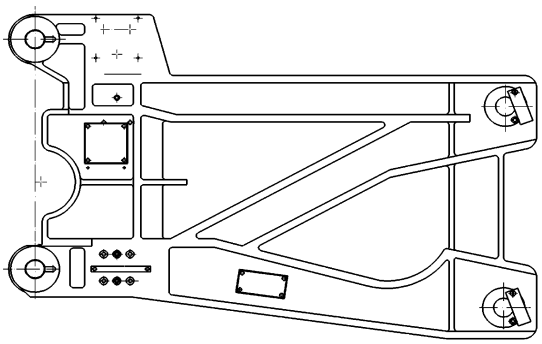
Ser. No.	Test point / Designation	Test / Activity	Qty. le	Qty. m	Qty. ri	Setpoint value, Lubricant	Ref. to page	Time of the work
1	Gear unit Guide plates	Check wear slot		4		min. 0,3 mm		h
2	Boom Guide plates	Check wear slots		4		min. 0,3 mm		h
3	Wheel unit	Gap between wheel and brake eccentric		8		min. 1 mm, max. 5 mm	49	v
4	Wheel unit	The Allen screws (M10) between axis and wheel carriage have to be retightened with 70 Nm.		24		70 Nm		h
5	Complete system	Operational safety test in acc. With accident prevention regulations BGV D8, Art. 23, Para. 2 for haacon / BW with documantation in the inspection manual.		1				once annually
6	Complete system	Safety inspection at haacon		1				nAfter 2500 load operations, no later than after 8 years

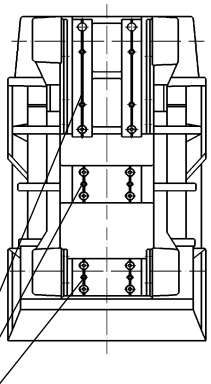
h = every 6 months; n = after use; v = before use



as delivered

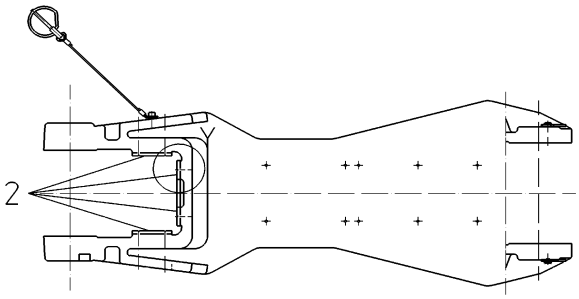
Boom

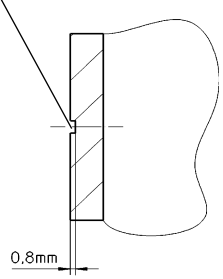




Wear slot

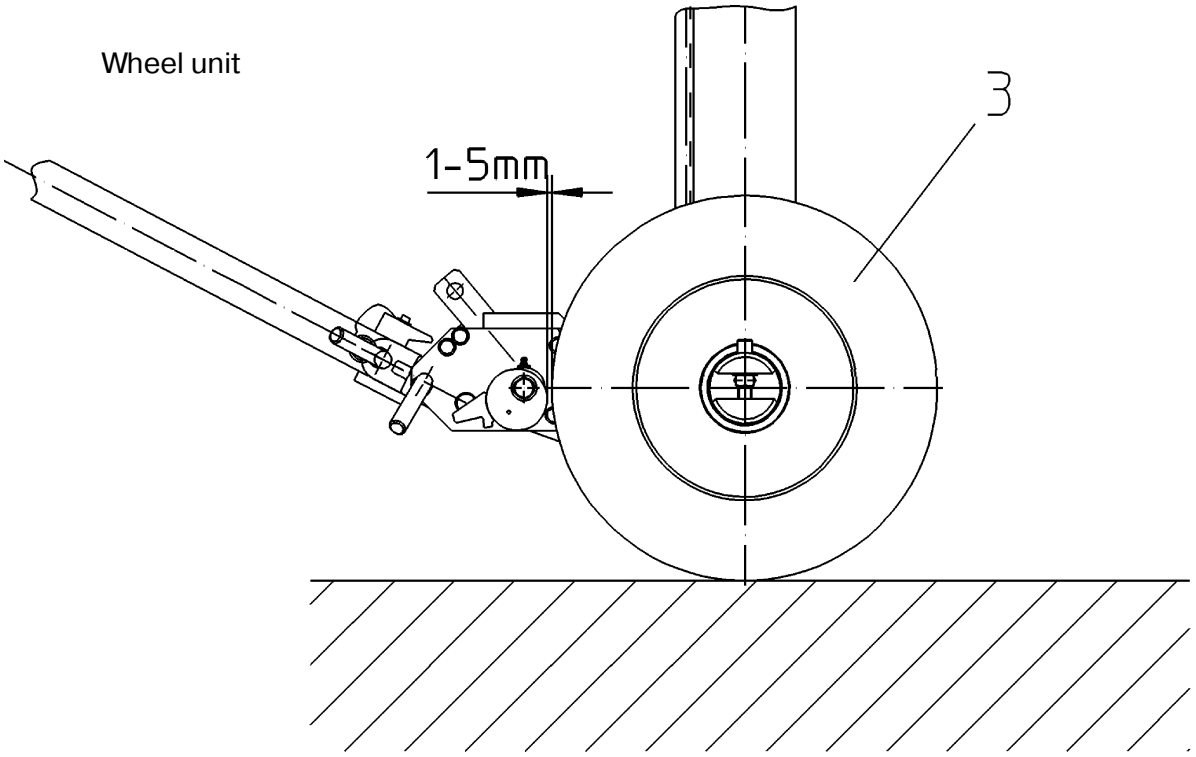
Detail Y:





as delivered

Wheel unit



C.6.4 Troop maintenance

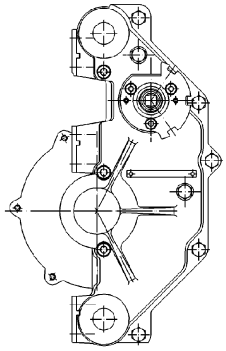
– Gear unit
– Boom

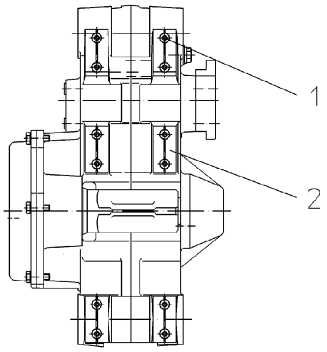
Changing the guide plate

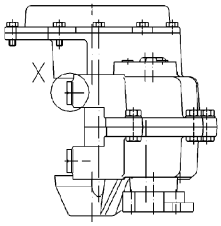
If the sliding surfaces of the guide plates are flush with the milled-in slots, the guide plates must be replaced.

- Unscrew the countersunk bolts (1)
- Raise the guide plates (2) off the clamping pins (3).
- Insert new guide plates (2).
- Tighten the countersunk bolts (1). (M_A 8 Nm)

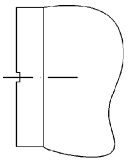
Gear unit



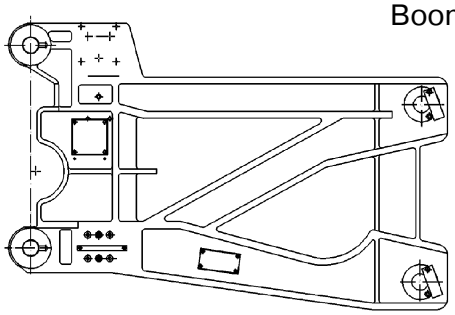


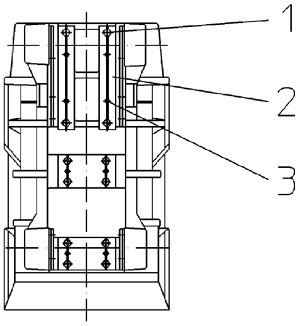


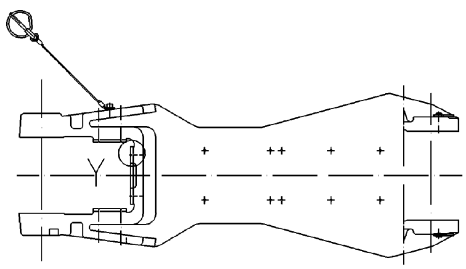
Detail X:



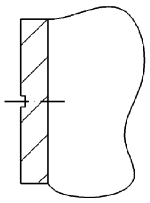
Boom







Detail Y:



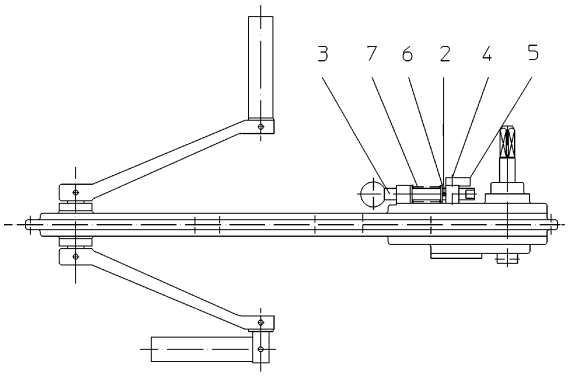
– Crankcase

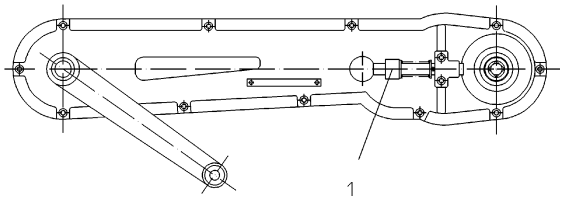
Changing the bolt

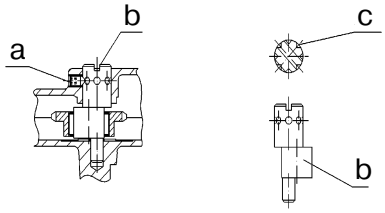
If the bolt (3) on the flattened surfaces displays excessive wear or if it has been bent by force, it must be replaced.

- Unscrew the threaded pin (1).
- Drive out the clamping pin (2).
- Unscrew the bolt (3) with the spring parts.
- Unscrew the fillister head screws (4).
- Remove the stop (5).
- Mount a new stop (5) with a fillister head screw and lock washer (4).
- Push the bolt (3) through the first bearing. When doing so, thread on the washers (6) and spring (7).
- Drive the clamping pin (2) into the bolt (3) between the washers (6).
- Bring the bolt (3) into position and secure it with the threaded pin (1) to prevent it from turning.
- Grease the bolt (3).

Check the function.







a = threaded pin; b = chain tensioner;
c = engagement position

Tensioning the chain

- Undo the threaded pin (until the chain tensioner is free)
- Turn the chain tensioner until the counter-pressure of the chain can be felt.
- Turn back the chain tensioner until one of the eight latching positions is reached (noticeable by screwing in the threaded pin)
- Screw in the threaded pin – fasten the chain tensioner.

– Wheel unit

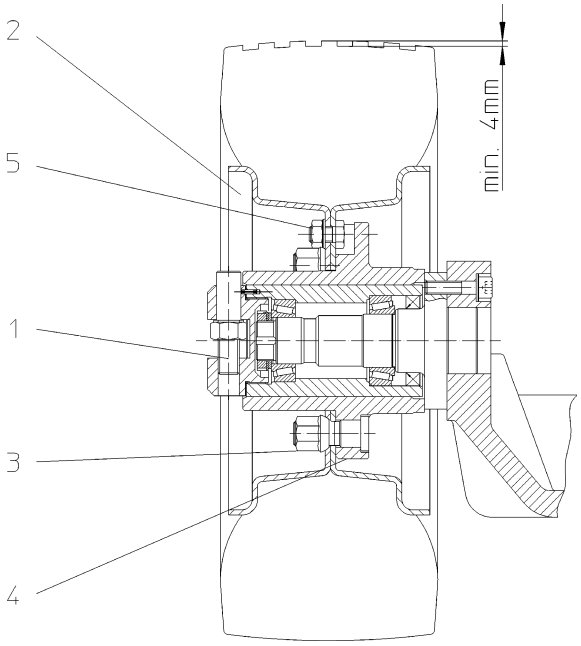
Changing the tyres, hoses and rims

If the profile depth becomes less than 4 mm, change the tyres or the fitted running wheel.

- Unscrew the threaded bolt (1).
- Pull off the wheel (2).
- Undo and remove the collar nut (3).
- Pull the wheel (2) off the flange (4).
- Let the air out of the wheel!
- Remove the retaining bolts (5) of the rim.
- Replace the worn or defective part.

Assemble in reverse order.

- Fill the fitted wheel with air.
- Tyre pressure 6 bar.



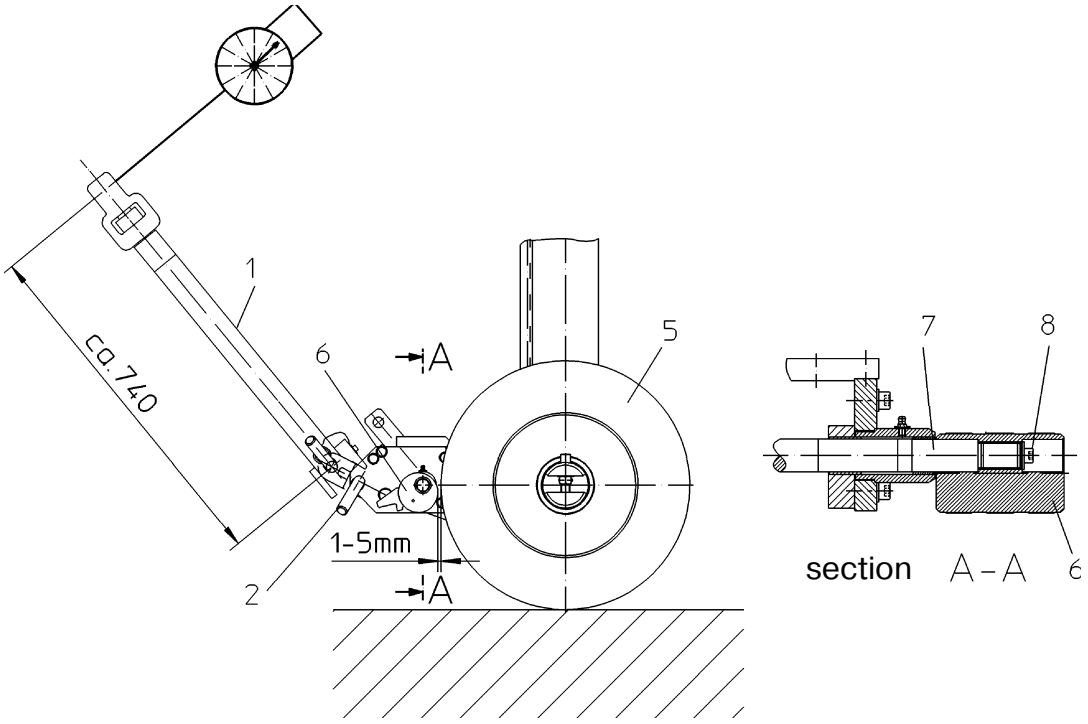
Brake adjustment

Set of wheels fitted to the system under the rackebaut.

- Fit the steering lever (1) on the set of wheels.
- Raise the steering lever (1) and insert the bolts (2) (brake non-functional). In this position, the air between the eccentric and the tyre must be **min. 1 mm and max. 5 mm**

Functional check

- Slightly raise the steering lever (1) and pull out the bolt (2).
- Lower the steering lever (1) until the eccentric (6) is on the tyre (5).
- Steering lever to be lifted until „end of way“ with adapted dynamometer.
- Steering lever with adapted dynamometer to be lowered until excenter (6) has a distance of 1 mm to the tire. In this position the force must be more than 50 N.
- If both work steps – raising the steering lever and lowering the steering lever – are possible without a fault occurring (e.g. sticking), the automatic brake is functional.
- **Attention**: If the space between the eccentric (6) and the tyres (5) is not sufficient or too great, offset the eccentric part (6) by one tooth on the splined shaft (7).
- Remove the fillister head screw (8).
- Pull the eccentric (6) off the splined shaft (7) and reattach it having been turned by one tooth. Check the space between the tyres (5) and the eccentric (6).
- Screw in the fillister head screw (8).



C.6.5 Temporary non-use and long-term storage

- Work for temporary non-use of up to 6 months.
  Only the scheduled care and maintenance work must be carried out.
- Work for long-term storage of up to 5 years: The same measures apply as for non-use of up to 6 months.
  A functional inspection must be carried out before putting back into operation.

E.C. Declaration of Conformity to 98/37/EC IIA

haacon hebetechnik gmbh
Josef-Haamann-Straße 6
D-97896 Freudenberg/Main

haacon

Name and address:

haacon hebetechnik gmbh
Josef-Haamann-Straße 6
97896 Freudenberg/Main

Telefon: 09375/84-0
Telefax: 09375/8466

Description:

Designation:	Shelter Lifting, Rolling and Loading System – electric drive	
Type:	1350.10	1350.6,5
Capacities	– 10 t	– 6,5 t

Relevant E.C. Directives:

98/37/EC	EC-machinery directive
73/23/EEC	EC-Low - voltage directives

Harmonised standards:

DIN EN ISO 12100-1/-2 safety of machines

National standards and technical specifications:

BGV A1 Unfallverhütungsvorschriften (Allgemeine Vorschriften)
BGV D8 Unfallverhütungsvorschriften (Winden, Hub-Zuggeräte)
DIN 1055 Blatt 4; Verkehrslasten- Windlasten
DIN 7355 Stahlwinden
DIN/VDE 0530 Teil 1 umlaufende, elektrische Maschinen
DIN/VDE 0660 Teil 2 Niederspannungsgeräte, Steuergeräte, Schaltelemente
DIN/VDE 0470 Schutzarten IP

Signed:

Freudenberg , 27.06.07

ppa. Michael Grän

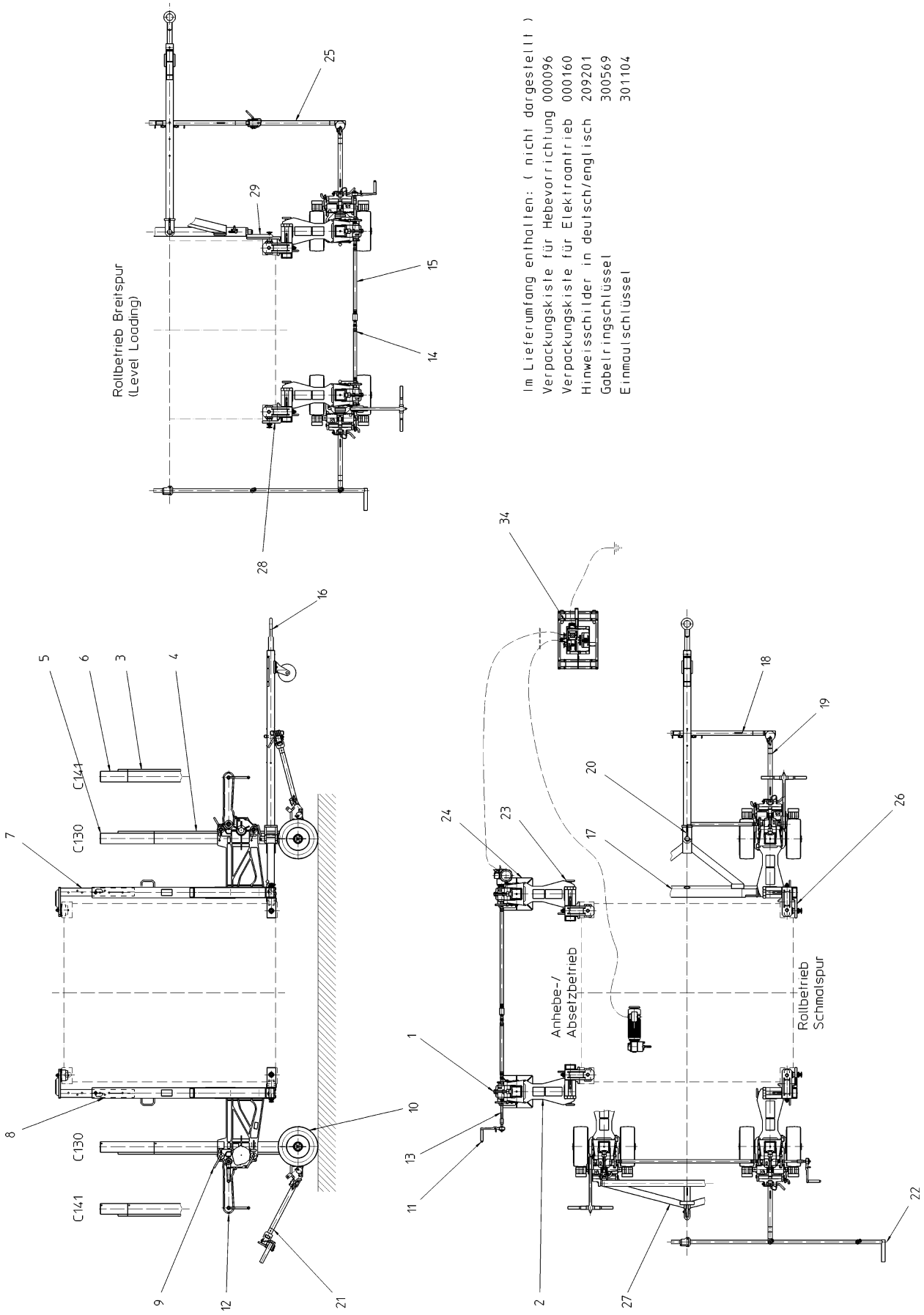
i. V. Konrad Lazarus

gb issue 3; 06/07

090053 dated 27.06.07

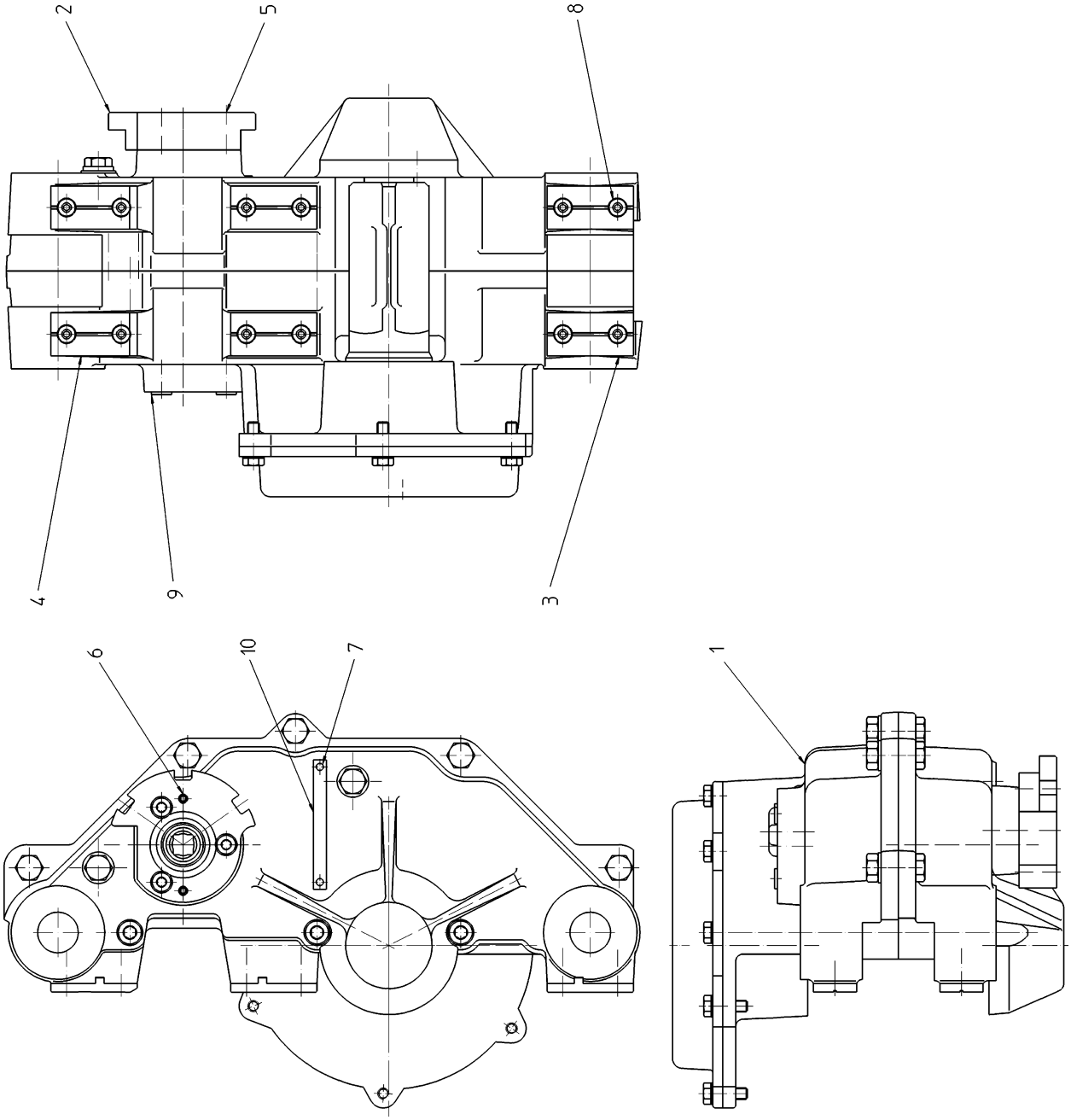
C.7 Spare parts

Lifting, rolling and loading system
Order No. 209841



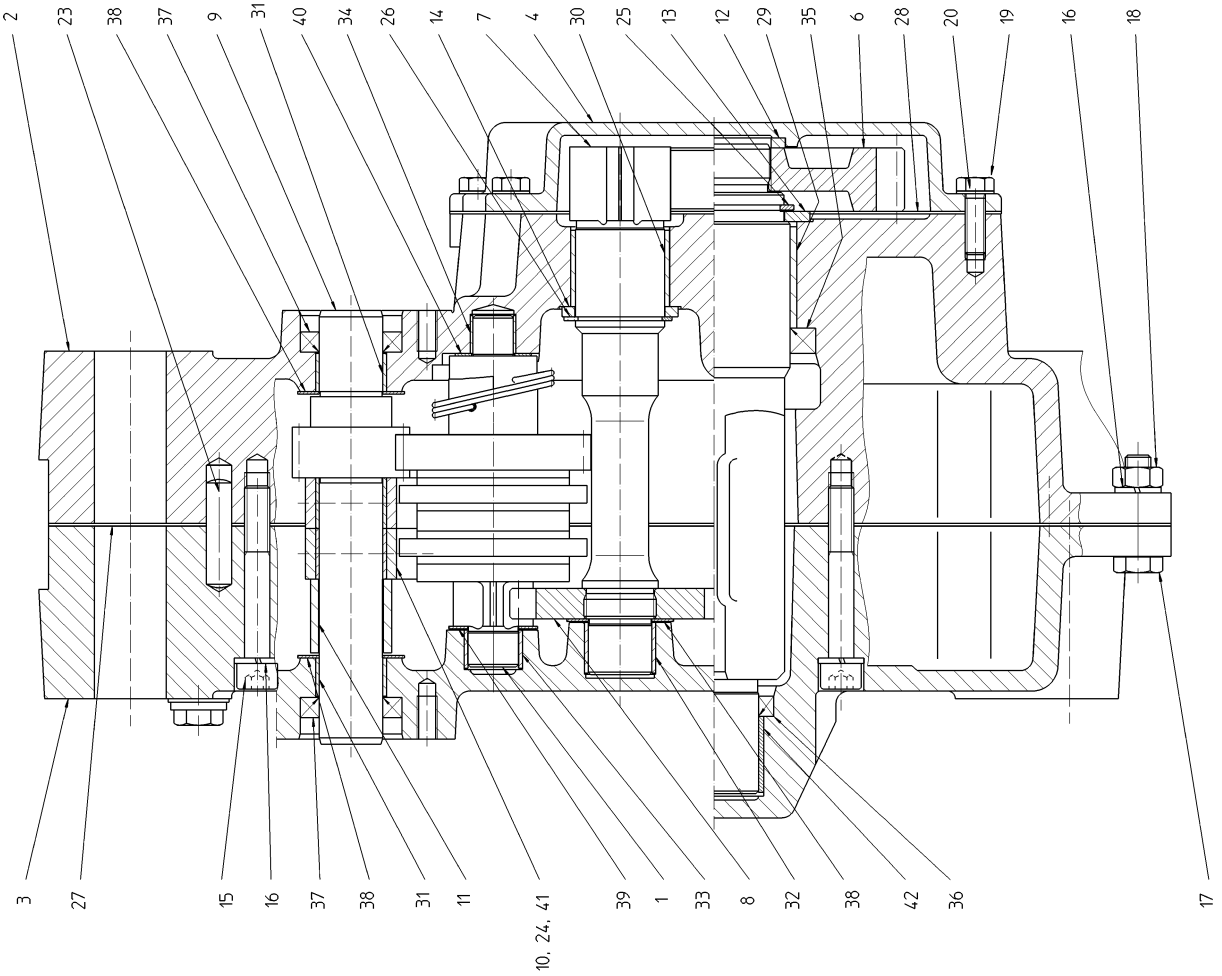
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Gear unit mont. compl.	128031	4		
2	Boom compl.	123167	4		
3	Rack compl.	108764	2		
4	Rack compl.	108765	2		
5	Rack extension compl.	108803	2		
6	Rack extension compl.	108801	2		
7	Bar, left mont.	121956	2		
8	Bar, right mont.	121955	2		
9	Bolt compl.	109367	8		
10	Wheel unit compl.	123168	4		
11	Crank compl.	108800	2		
12	Crankcase mont.	108762	2		
13	Extension compl.	202222	2		
14	Connecting shaft compl.	108804	2		
15	Connecting shaft compl.	123022	2		
16	Center part mont. compl.	109752	1		
17	Cross bar mont. compl.	109751	1		
18	Brace mont. compl.	109756	1		
19	Steering lever compl.	123173	2		
20	Bolt mont. compl.	109146	1		
21	Steering lever compl.	123170	2		
22	Steering rod	123614	1		
23	Bolt compl.	123615	8		
24	Base plate compl.	108712	4		
25	Extension mont. compl.	123093	2		
26	Retaining bracket compl.	121954	4		
27	Tow bar mont.	123171	1		
28	Retaining bracket compl.	123688	2		
29	Retaining console compl.	123689	2		
30	Open ended spanner	300569	1	DIN 3113	SW 30
31	Single-end open ended spanner	301104	1	DIN 894	SW 24
32	Package box	000096	1		
33	Set notice plates	209201	1		
34	Electric drive compl.	209842	1		24 V
35	Package box electric wagon	000160	1		

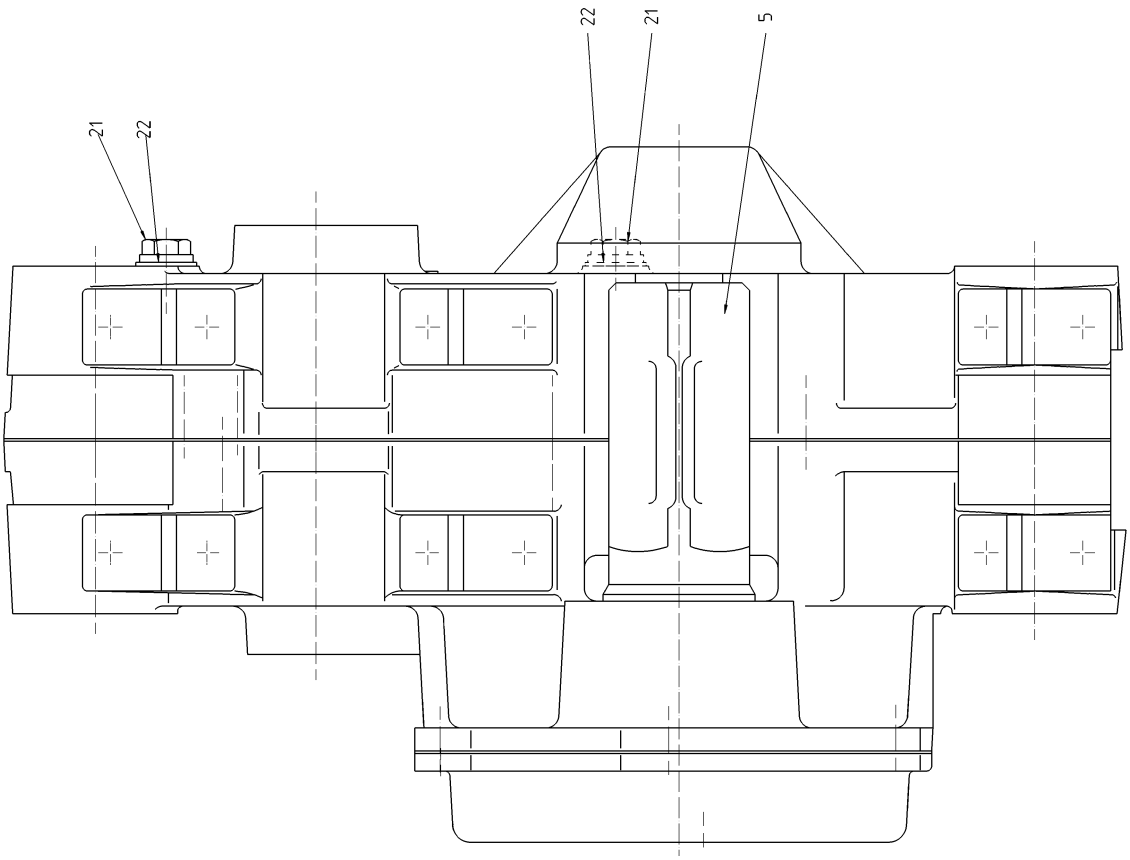
Gear unit mont. compl.
Order No. 128031



Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Gear unit compl.	128035	1		
2	Latching disk compl.	103598	1		
3	Guide plates	104735	4		
4	Guide plates	104736	2		
5	Cheese head screw	100021	3	ISO 4762	M8x20-A2-70
6	Clamping pin	100143	2	ISO 8752	6x40-A
7	Grooved pin	201418	2		
8	Countersunk screw	100635	12	ISO 10642	M6x12-A2-70
9	Plug	101187	3		GPN 300 F2
10	Identification plate	123931	1		

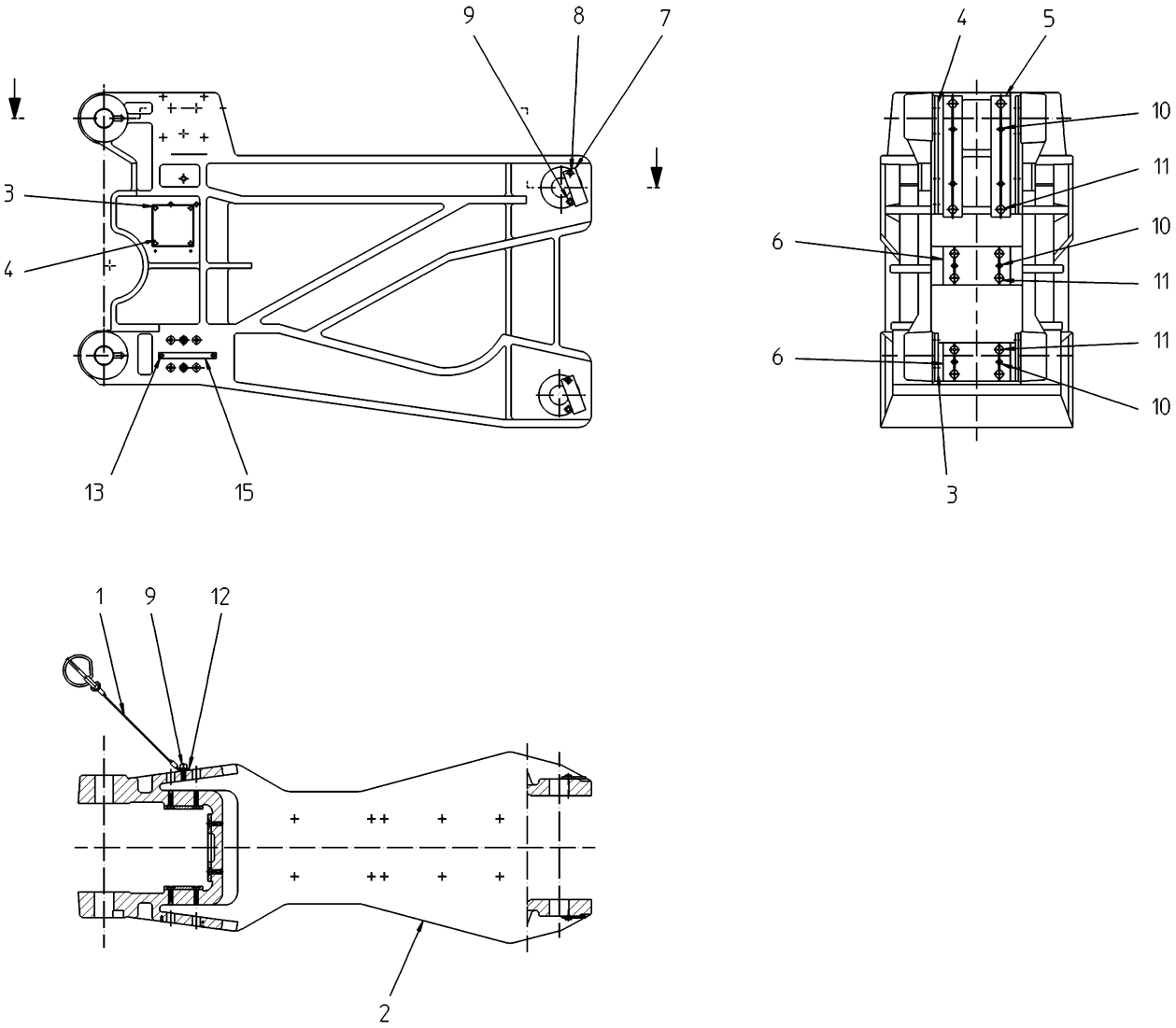
Gear unit compl.
Order No. 128035





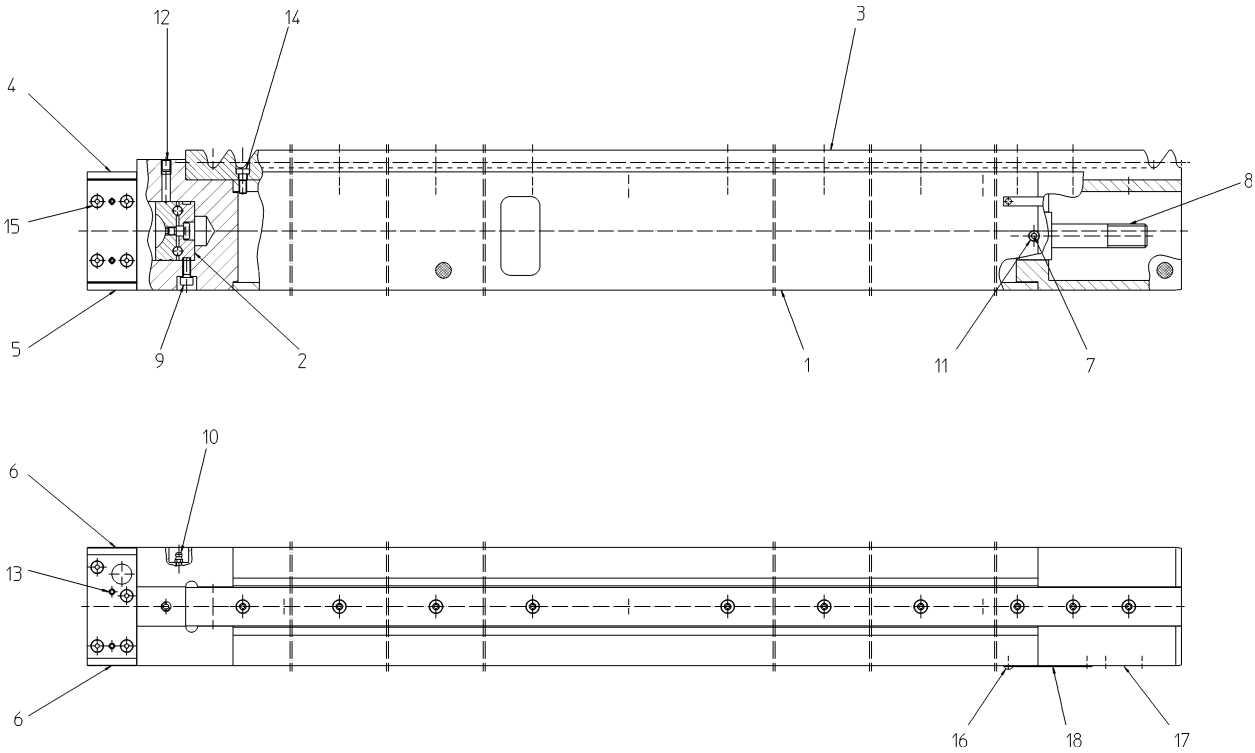
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Safety blocking device compl.	114961	1		
2	Front gear box housing	114958	1		
3	Rear gear box housing	103621	1		
4	Gearbox cover	104729	1		
5	Rack pinion	104730	1		
6	Gear wheel	103827	1		
7	Intermediate shaft	104731	1		
8	Gear wheel	103874	1		
9	Crank shaft	114959	1		
10	Detent lever compl.	110731	2		
11	Clamping sleeve	103623	1		
12	Gliding ring	104732	1		
13	Washer	104733	1		
14	Washer	104734	1		
15	Allen screw	100050	3	ISO 4762	M10x70-A2-70
16	Spring washer	100470	8	DIN 7980	A10-A2-70
17	Hexagonal screw	100210	5	ISO 4017	M10x40-8.8-A3P
18	Hexagonal nut	100363	5	ISO 4032	M10-8-A3D
19	Hexagonal screw	100195	6	ISO 4017	M8x25-A2-70
20	Sping lock washer	100456	6	DIN 137	B8-A2
21	Closing screw	100682	2	DIN 910	M16x1,5-A2
22	Usit-ring	100908	2		16,7x24x1,5
23	Cylinder pin	100773	2	ISO 2338	B-10x40-St
24	Ball	101029	2	DIN 5401	ø6,5
25	Securing ring	100743	1	DIN 471	55x2
26	Securing ring	100736	1	DIN 471	35x1,5
27	Gasket	100923	1		
28	Gasket	100924	1		
29	Bushing	100990	1		60/65/40
30	Bushing	100981	1		35/39/30
31	Bushing	100969	2		GLY.PG252815F
32	Bushing	100970	1		25/28/20
33	Bushing	100964	1		20/23/15
34	Bushing	100959	1		16/18/15
35	Shaft sealing ring	100893	1		BASL 60x80x10
36	Shaft sealing ring	106300	1		BASL 35x47x7/8,5
37	Shaft sealing ring	100875	2		BASL 25x40x/8
38	Thrust washer	100814	3		AS 2542
39	Thrust washer	100813	1		AS 2035
40	Thrust washer	100812	1		AS 1730
41	Compression spring	106884	2		6,8x1,25x13,0
42	Bushing	117469	1		

Boom compl.
Order No. 123167



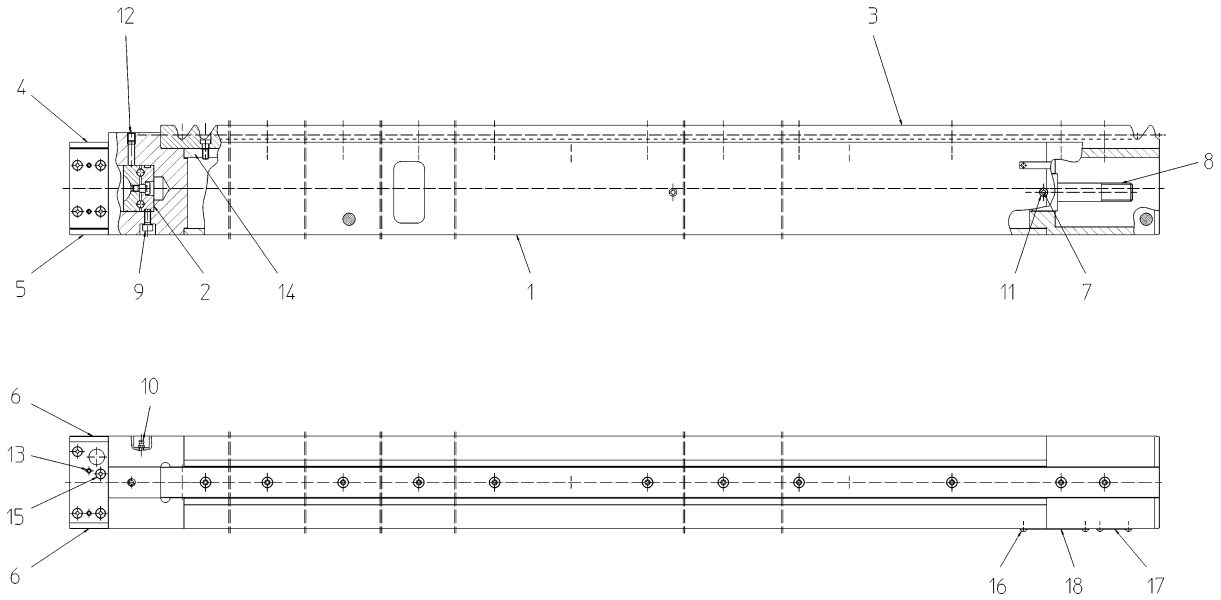
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Folding pin compl.	103597	2		
2	Boom	107984	1		
3	Guide plate	103627	2		
4	Guide plate	103628	2		
5	Guide plate	103629	2		
6	Guide plate	104739	2		
7	Ratchet	123608	4		
8	Flat headed screw	115477	4	DIN 923	M4x4-A3C
9	Allen screw	100065	6	ISO 4762	M6x12-A2-70
10	Clamping pin	100153	16	ISO 8752	8x20-A
11	Countersunk screw	100635	28	ISO 10642	M6x12-A2-70
12	Washer	100442	2	ISO 7093	6,4-140HV-A2
13	Grooved pin	201418	6	ISO 8746	3,5x6-St-A3A
14	Identification plate	123975	1		TS 1094
15	Identification plate	123671	1		

Rack compl.
Order No. 108764



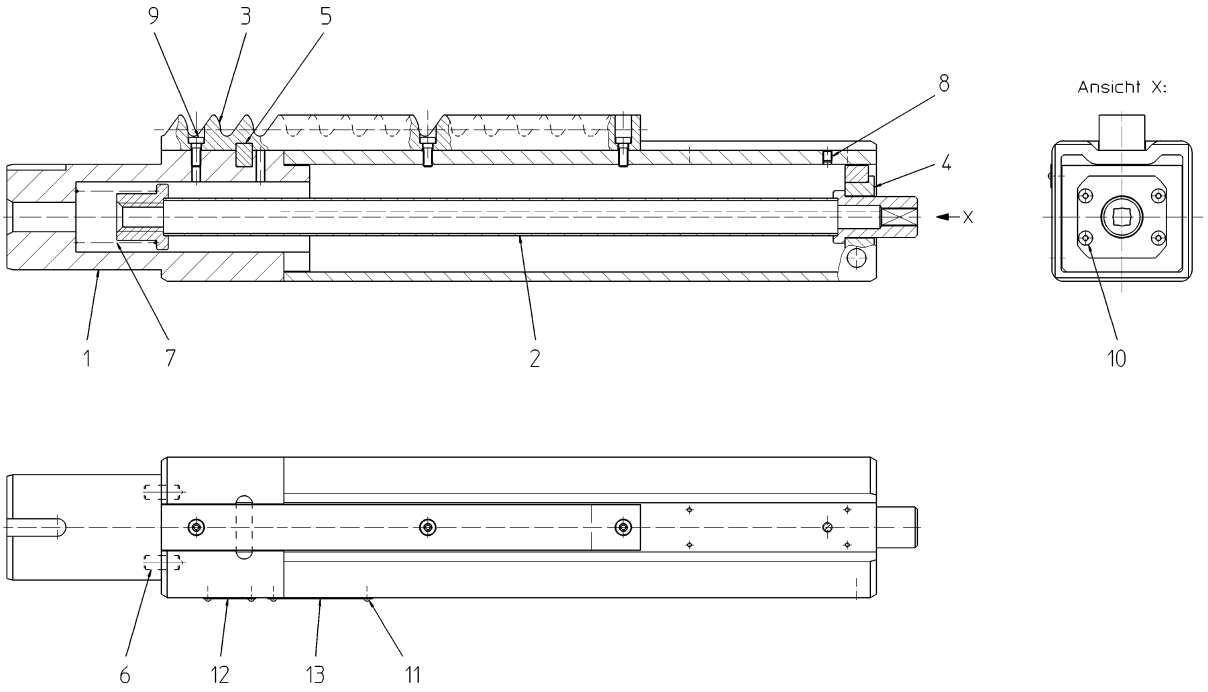
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Rack tube compl.	109202	1		
2	Ball, bearing compl.	107918	1		
3	Rack	109161	1		
4	Plate	107915	1		
5	Plate	107916	1		
6	Plate	107917	2		
7	Bolt	107943	1		
8	Threaded bolt	107911	1		
9	Screw	107942	1		
10	Grease nipple	100271	1	DIN 71412	A-M6x1-Ms
11	Allen screw	100066	1	ISO 4762	M6x16
12	Threaded pin	100706	1	DIN 913	M10x12-A2-70
13	Clamping pin	100132	8	ISO 8752	6x18-A
14	Allen screw	100620	9	DIN 6912	M8x20-A2
15	Countersunk screw	100635	16	ISO 10642	M6x12-A2-70
16	Grooved pin	201418	4	ISO 8746	3,5x6-St-A3A
17	Notice plate	108553	1		
18	Indification plate	108775	1		

Rack compl.
Order No. 108765



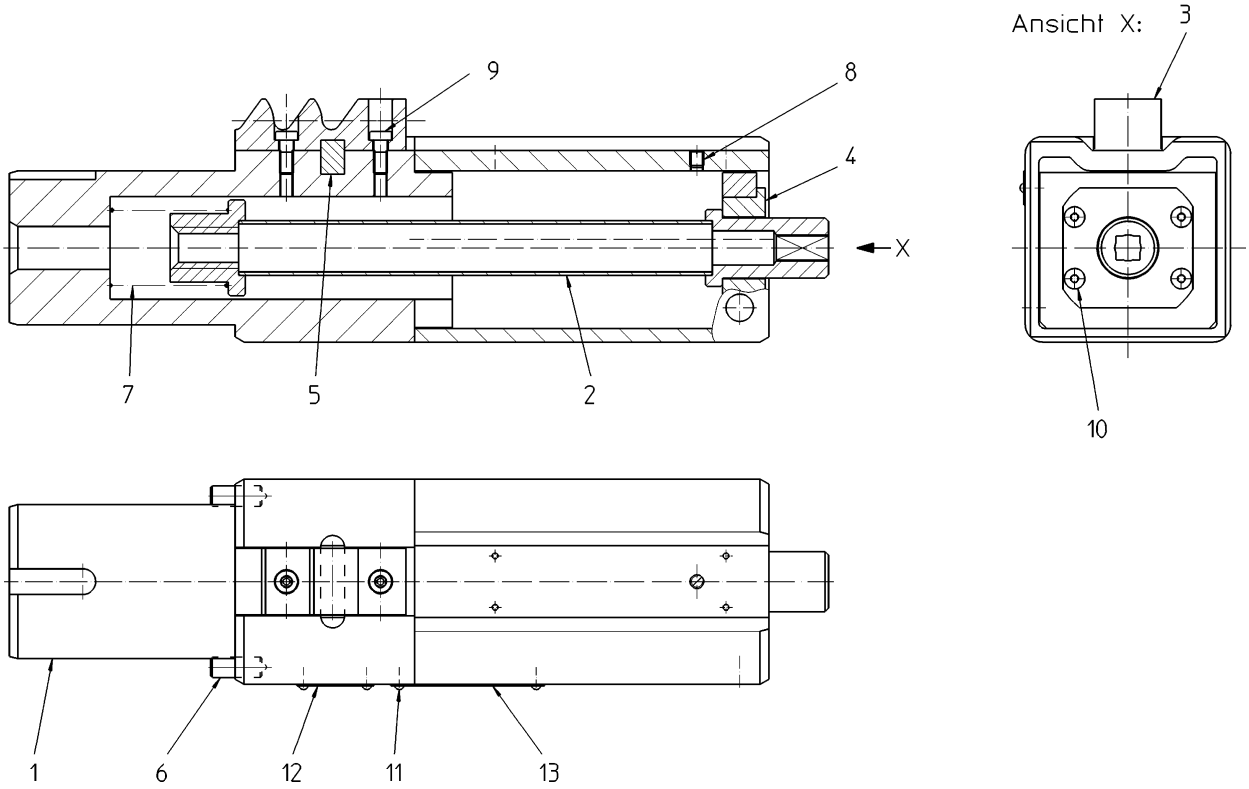
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Rack tube compl.	108766	1		
2	Ball, bearing compl.	107918	1		
3	Rack	108802	1		
4	Plate	107915	1		
5	Plate	107916	1		
6	Plate	107917	2		
7	Bolt	107943	1		
8	Threaded bolt	107911	1		
9	Screw	107942	1		
10	Grease nipple	100271	1	DIN 71412	A-M6x1-Ms
11	Allen screw	100066	1	ISO 4762	M6x16
12	Threaded pin	100706	1	DIN 913	M10x12-A2-70
13	Clamping pin	100132	8	ISO 8752	6x18-A
14	Allen screw	100620	9	DIN 6912	M8x20-A2
15	Countersunk screw	100635	16	ISO 10642	M6x12-A2-70
16	Grooved pin	201418	4	ISO 8746	3,5x6-St-A3A
17	Notice plate	108554	1		
18	Indification plate	108664	1		

Rack extension compl.
Order No. 108803



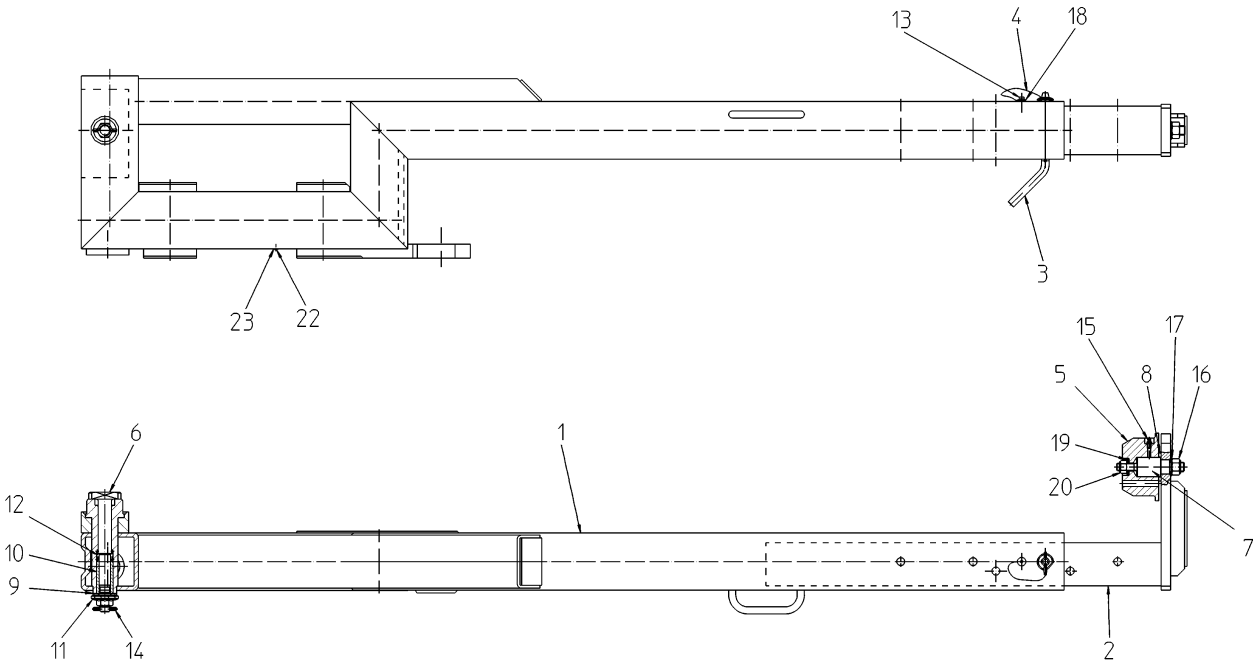
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Rectangular tube compl.	108757	1		
2	Extension compl.	108707	1		
3	Rack	108709	1		
4	Cover	107929	1		
5	Key	107932	1		
6	Cylinder pin	107933	2		
7	Compression spring	106020	1		
8	Threaded pin	100492	1	ISO 4766	M8x10-A4D
9	Allen screw	100620	3	DIN 6912	M8x20-A2
10	Countersunk screw	101705	4	ISO 10642	M6x20-A2
11	Grooved pin	201418	4	ISO 8746	3,5x6-St-A3A
12	Notice plate	108553	1		
13	Indification plate	108656	1		

Rack extension compl.
Order No. 108801



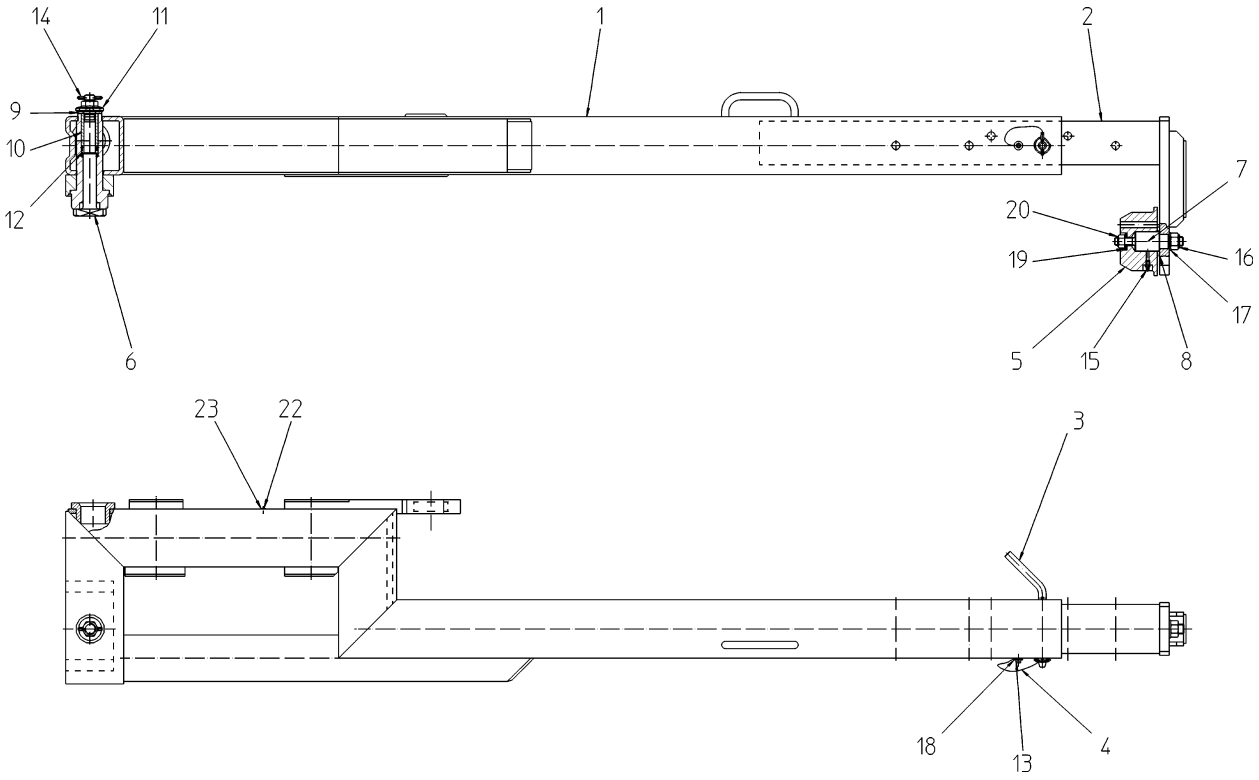
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Rectangular tube compl.	108758	1		
2	Extension compl.	108706	1		
3	Rack	108710	1		
4	Cover	107929	1		
5	Key	107932	1		
6	Cylinder pin	107933	2		
7	Compression spring	106020	1		
8	Threaded pin	100492	1	ISO 4766	M8x10-A4D
9	Allen screw	100620	3	DIN 6912	M8x20-A2
10	Countersunk screw	101705	4	ISO 10642	M6x20-A2
11	Grooved pin	201418	4	ISO 8746	3,5x6-St-A3A
12	Notice plate	108554	1		
13	Indification plate	108657	1		

Bar, left mont.
Order No. 121956



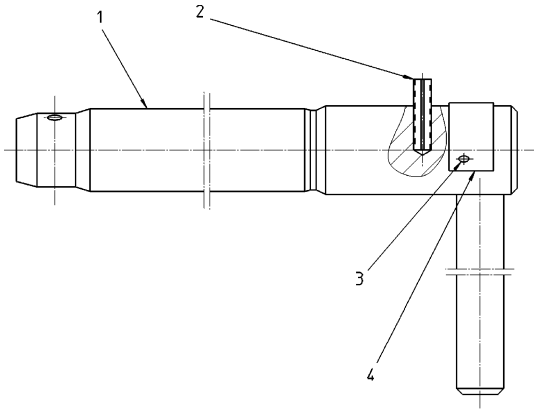
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Bar, left compl.	121929	1		
2	Boom compl.	121926	1		
3	Bolt	108227	1		
4	Folding pin compl.	114716	1		
5	Guide	108867	1		
6	Locking bolt	121934	1		
7	Bolt	121935	1		
8	Washer	121936	1		
9	Washer	107925	1		
10	Bushing	107940	1		
11	Nut	123607	1		
12	Compression spring	101074	1	VD-264	34,5x2,5x71,5-A2
13	Allen screw	100065	1	ISO 4762	M6x12-A2-70
14	Clamping pin	100146	1	ISO 8752	6x50-A
15	Grease nipple	100307	1	DIN 71412	A-M8x1
16	Safety nut	100384	1	DIN 985	M20-8-N-A3P
17	Washer	100417	1	ISO 7090	B21-A3C
18	Washer	100442	1	ISO 7093	6,4-140HV-A2
19	Spring	106446	2		34x16x1,5
20	Safety nut	101675	1	DIN 985	M16-A3P
22	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
23	Indification plate	123099	1		

Bar, right mont.
Order No. 121955



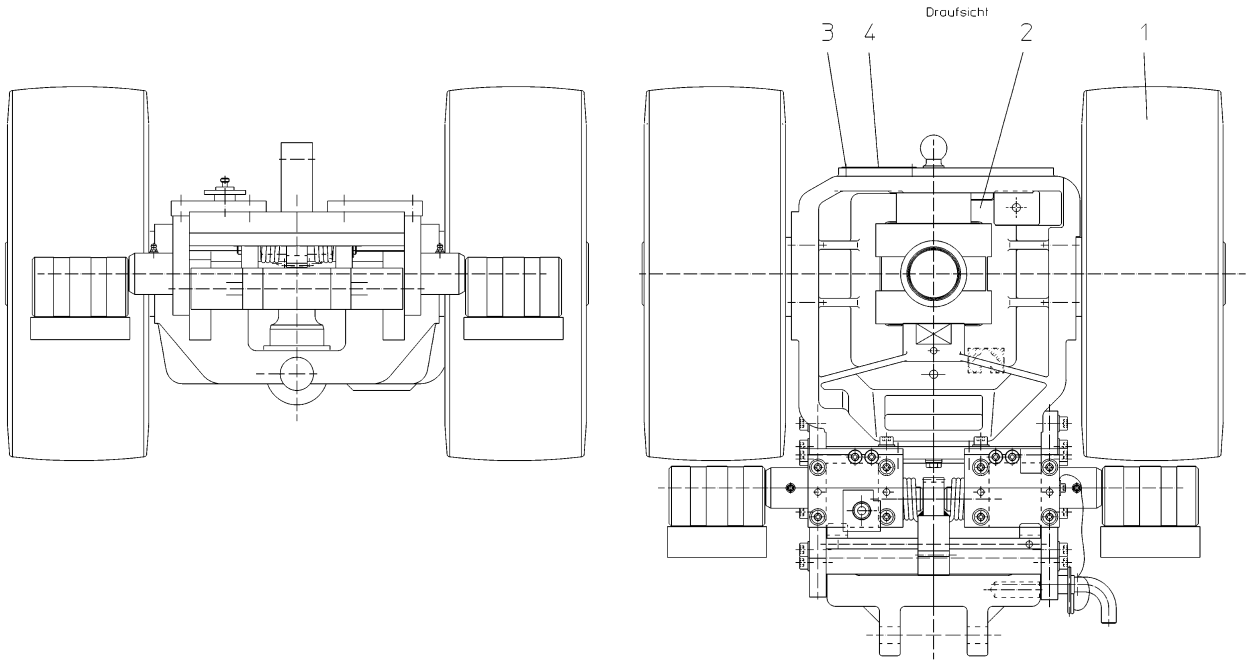
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Bar, left compl.	121918	1		
2	Boom compl.	121926	1		
3	Bolt	108227	1		
4	Folding pin compl.	114716	1		
5	Guide	108867	1		
6	Locking bolt	121934	1		
7	Bolt	121935	1		
8	Washer	121936	1		
9	Washer	107925	1		
10	Bushing	107940	1		
11	Nut	123607	1		
12	Compression spring	101074	1	VD-264	34,5x2,5x71,5-A2
13	Allen screw	100065	1	ISO 4762	M6x12-A2-70
14	Clamping pin	100146	1	ISO 8752	6x50-A
15	Grease nipple	100307	1	DIN 71412	A-M8x1
16	Safety nut	100384	1	DIN 985	M20-8-N-A3P
17	Washer	100417	1	ISO 7090	B21-A3C
18	Washer	100442	1	ISO 7093	6,4-140HV-A2
19	Spring	106446	2		34x16x1,5
20	Safety nut	101675	1	DIN 985	M16-A3P
22	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
23	Indification plate	123098	1		

Bolt compl.
Order No. 109367



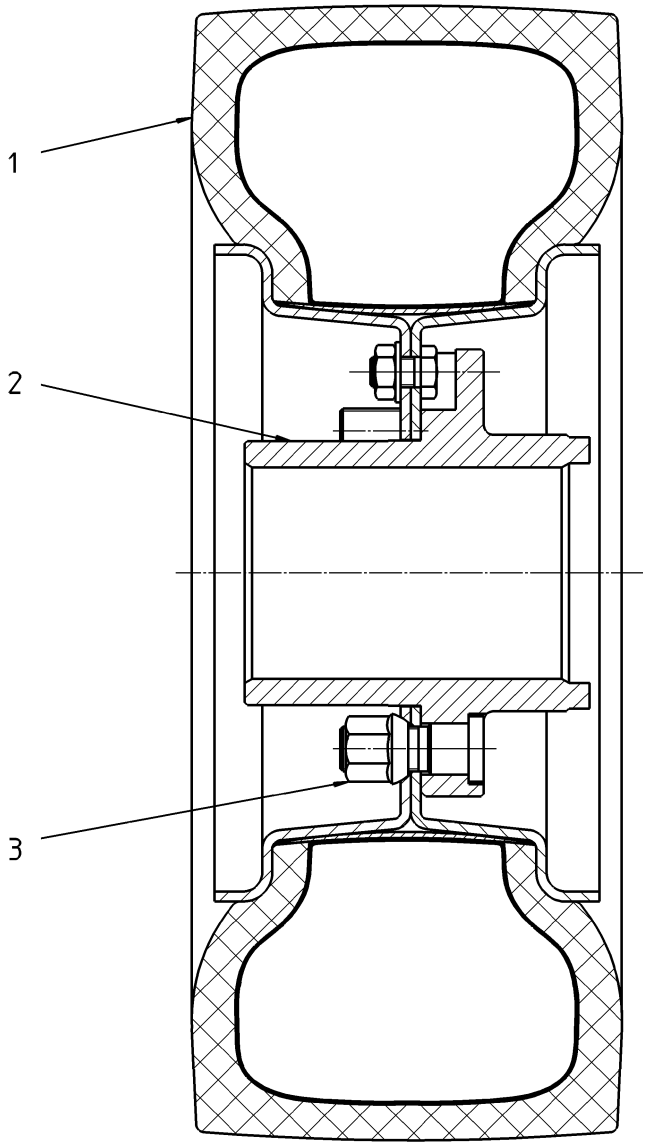
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Bolt compl.	107976	1		
2	Clamping pin	100136	1	ISO 8752	6x24-A
3	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
4	Supply plate	109313	1		

Wheel unit compl.
Order No. 123168

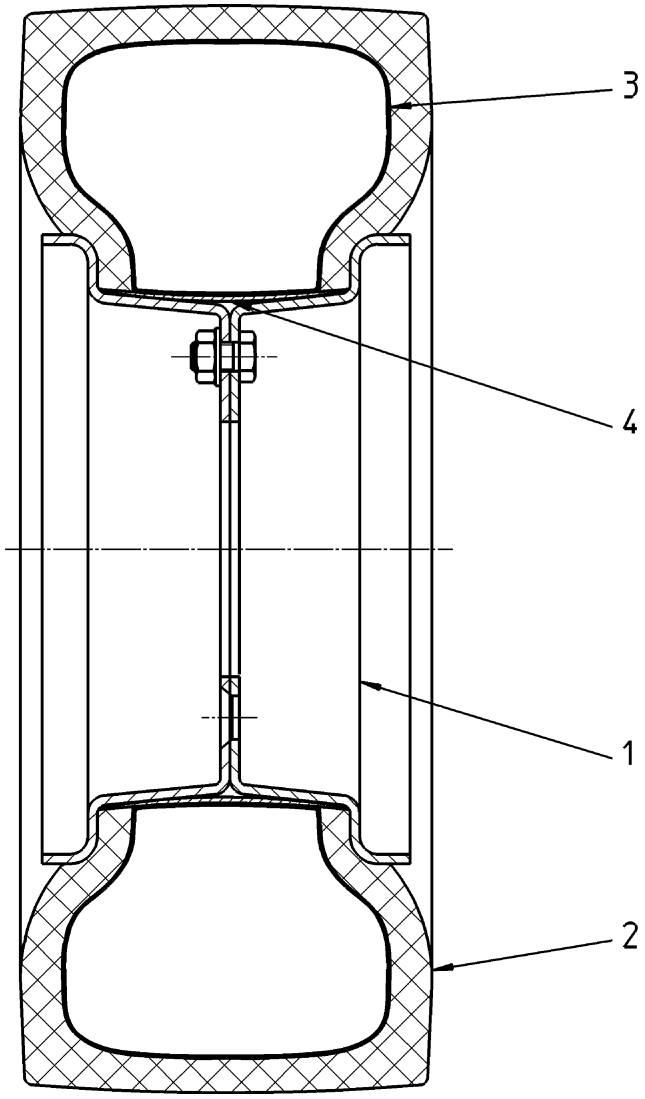


Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Wheel compl.	123213	2		
2	Wheel carriage mont.	119695	1		
3	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
4	Indification plate	123188	1		

Wheel compl.
Order No. 123213

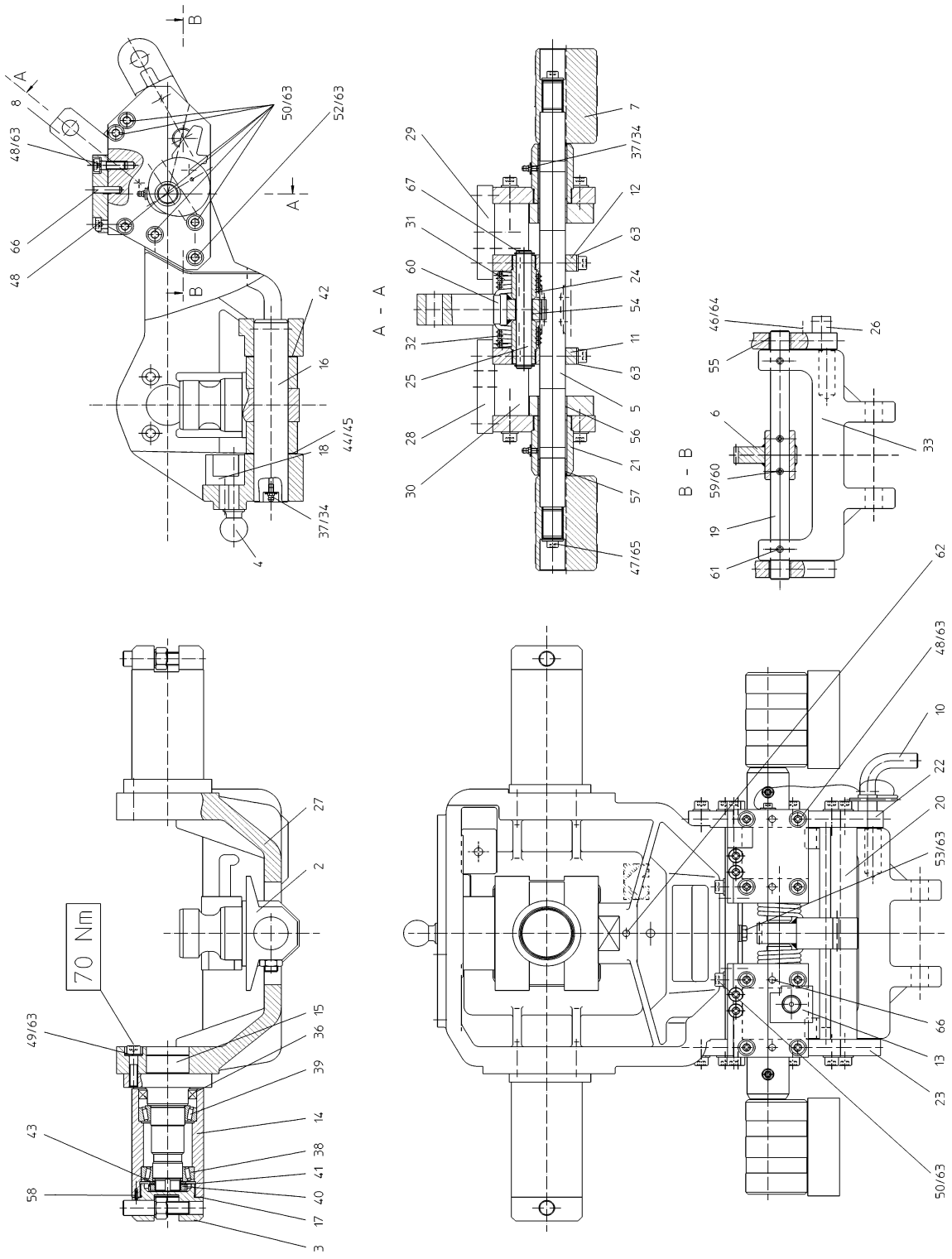


Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Wheel assemply	120519	1		
2	Flange compl.	118656	1		
3	Nut	115410	5		



Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Rim compl.	106704	1		
2	Tyre	120520	1		180/70 R8 IC 70
3	Tube	106706	1		Gr. 18x7-8
4	Tube band	106707	1		Gr. 115x8 (18x7-8)

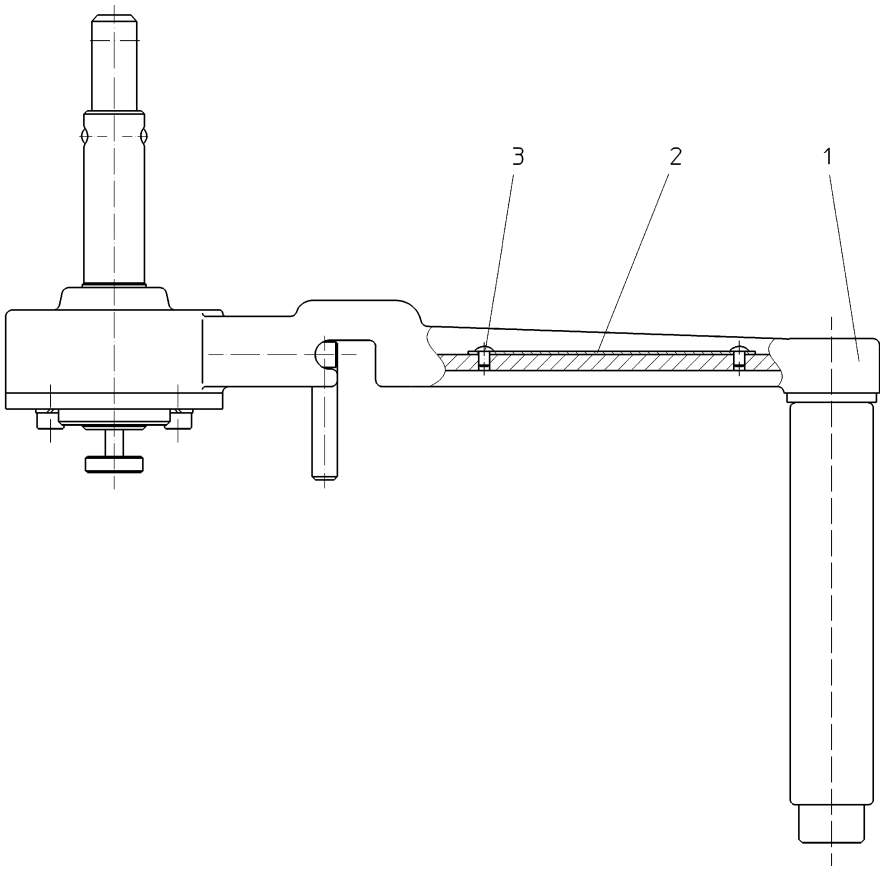
Wheel carriage mont.
Order No. 119695



Pos.	Description	Order No.	Qty.	DIN No.	Dimension
2	King pin compl.	109086	1		
3	Locking piece compl.	108411	2		
4	Lever compl.	116509	1		
5	Brake wave compl.	118811	1		
6	Gear wheel compl.	118807	1		
7	Excentric compl.	118814	2		
8	Mounting link compl.	118801	1		

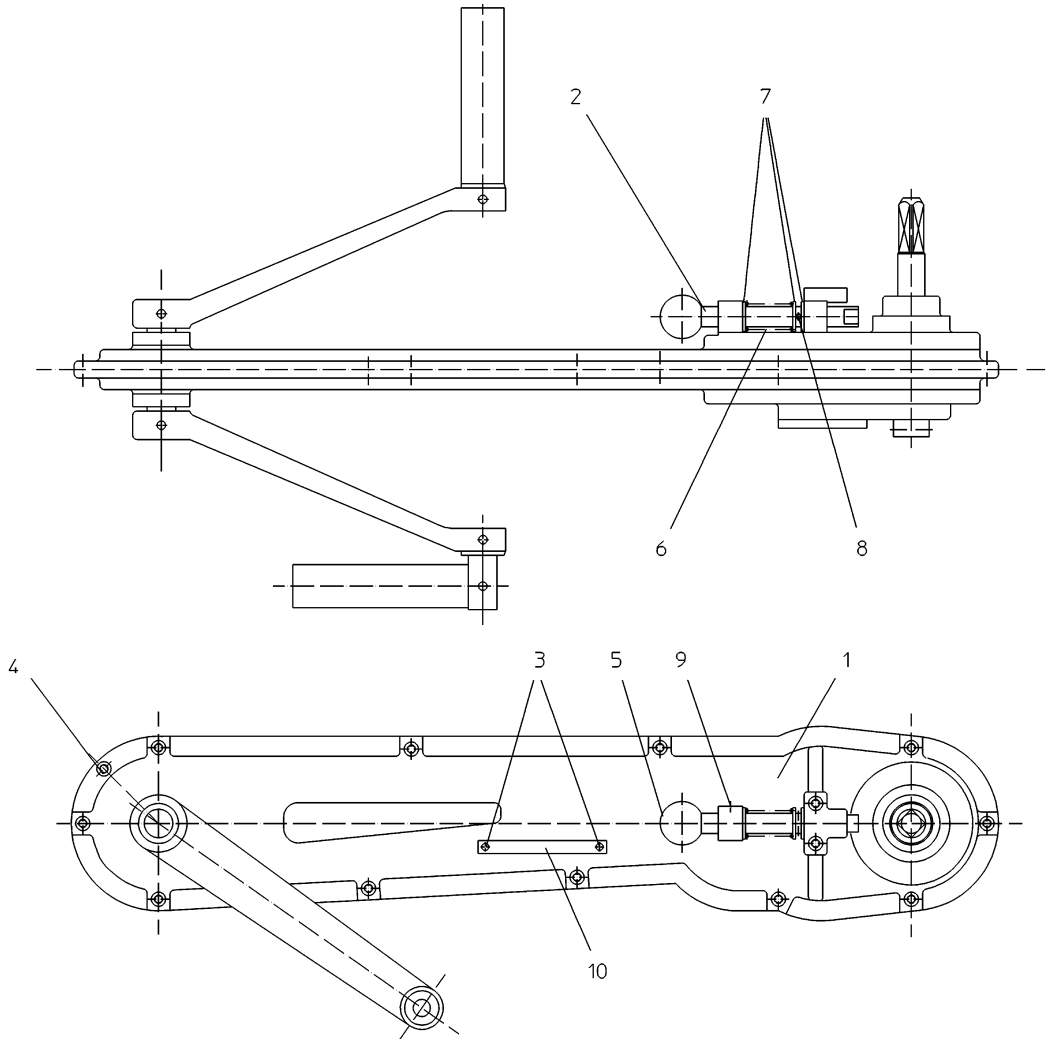
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
10	Bolt compl.	118823	1		
11	Bearing compl. right	118830	1		
12	Bearing compl. left	118832	1		
13	Bolt compl.	107927	1		
14	Hub	118654	2		
15	Axis	107986	2		
16	Bolt	107912	1		
17	Safety washer	109073	2		
18	Locking bar	107935	1		
19	Wave	118805	1		
20	Limit stop	118806	1		
21	Bearing	118817	2		
22	Side frame left	118815	1		
23	Side frame right	118818	1		
24	Bushing	118826	2		
25	Bolt	118827	1		
26	Bearing	118831	1		
27	Wheel carriage	118804	1		
28	Plate right	118833	1		
29	Plate left	118834	1		
30	Frame	118835	1		
31	Spring left	120424	1		
32	Spring right	120425	1		
33	Cross beam	118819	1		
34	Washer	106040	3		GPN 900 K4 rot
35	Shaft sealing ring	101742	2		BASL-48x68x10
37	Grease nipple	100271	3	DIN 71412	A-M6x1-Ms
38	Taper roller bearing	106410	2	DIN 720	32007X
39	Taper roller bearing	106409	2	DIN 720	32008X
40	Nut	107968	2	DIN 981	KM6
41	Securing piece	107967	2	DIN 5406	MB6
42	Axial disc	100817	1		AS 4060
43	Supporting disc	120261	2	DIN 988	30x42x2,5
44	Shim ring	120174	2	DIN 988	42x52x0,3
45	Shim ring	120173	2	DIN 988	42x52x0,5
46	Allen screw	100065	1	ISO 4762	M6x12-A2-70
47	Allen screw	100020	2	ISO 4762	M8x20-8.8-A3P
48	Allen screw	101696	12	DIN 6912	M10x30-A2-70
49	Allen screw	120175	6	ISO 4762	M10x40-10.9-A2P
50	Allen screw	101855	14	ISO 4762	M10x40-A2-70
52	Allen screw	120433	2	DIN 6912	M10x60-A2-70
53	Hexagon head screw	120260	1	ISO 4017	M10x20-A2-70
54	DU-Bushing	100963	1		18/20/25
55	Bushing	100967	2		GLY.PG 222520 F
56	Bushing	100978	2		30/34/30
57	Bushing	100976	2		30/34/20
58	Clamping pin	100081	2	ISO 8752	3x12-A
59	Clamping pin	100122	2	ISO 8752	5x36-A
60	Clamping pin	100156	3	ISO 8752	8x35-A
61	Clamping pin	100186	2	ISO 8752	8x50-A
62	Clamping pin	101893	1	ISO 8752	8x60-A
63	Washer	100406	36	ISO 7090	A10,5-140HV-A2
64	Washer	100442	1	ISO 7093	6,4-140HV-A2
65	Washer	120457	2	DIN 440	R9-100HV-A3P
66	Cylinder pin	120431	4	ISO 2338	A-8x30-A2-70
67	Securing ring	106479	2	DIN 471	18x1,2-A2

Crank compl.
Order No. 108800



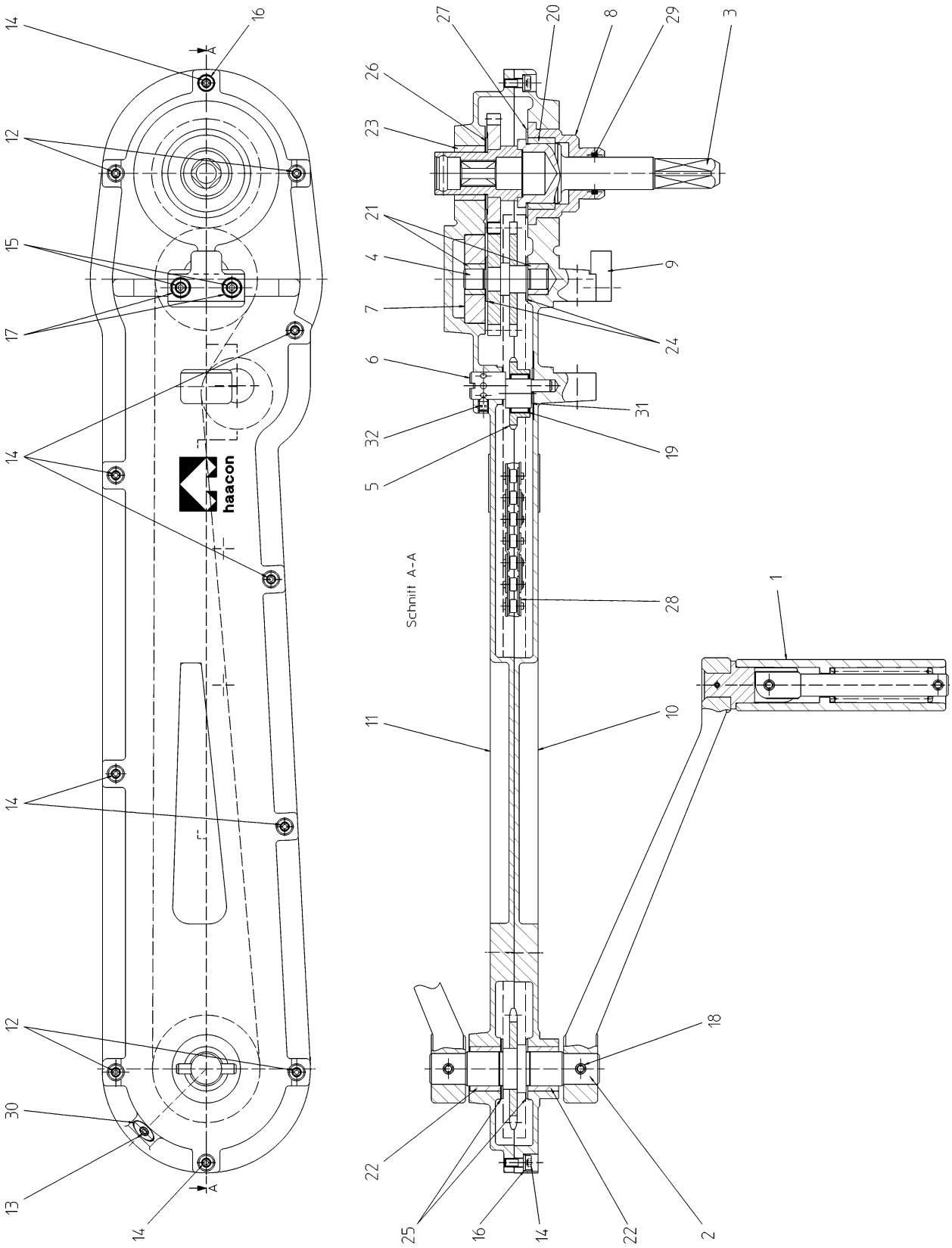
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Crank compl.	201644	1		
2	Identification plate	108658	1		
3	Grooved pin	201148	2	ISO 8746	3,5x6

Crankcase mont.
Order No. 108762



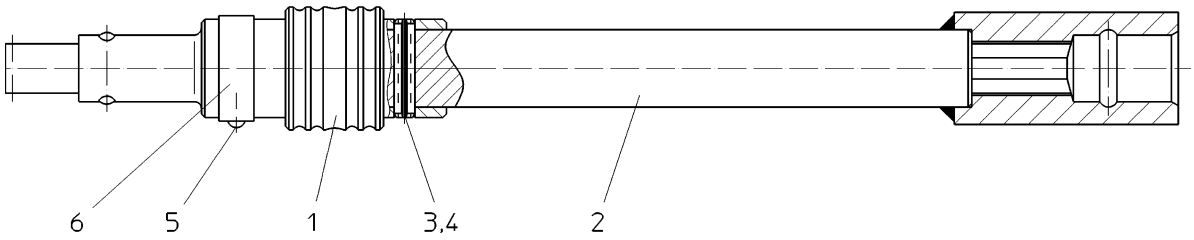
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Crankcase compl.	118020	1		
2	Bolt	104829	1		
3	Grooved pin	201148	2	ISO 8746	3,5x6-St-A3A
4	Disc	106040	1		GPN 900 K4 rot
5	Spring loaded pin	101172	1		625-23208
6	Compression spring	101068	1	VD-214	ø17,6-ø1,6x51,5
7	Disc	100430	3	ISO 7092	15-140HV-A2
8	Clamping pin	100084	1	ISO 8752	3x20-A
9	Thread pin	100717	1	DIN 915	M6x12-A2-70
10	Identification plate	108649	1		

Crankcase compl.
Order No. 118020



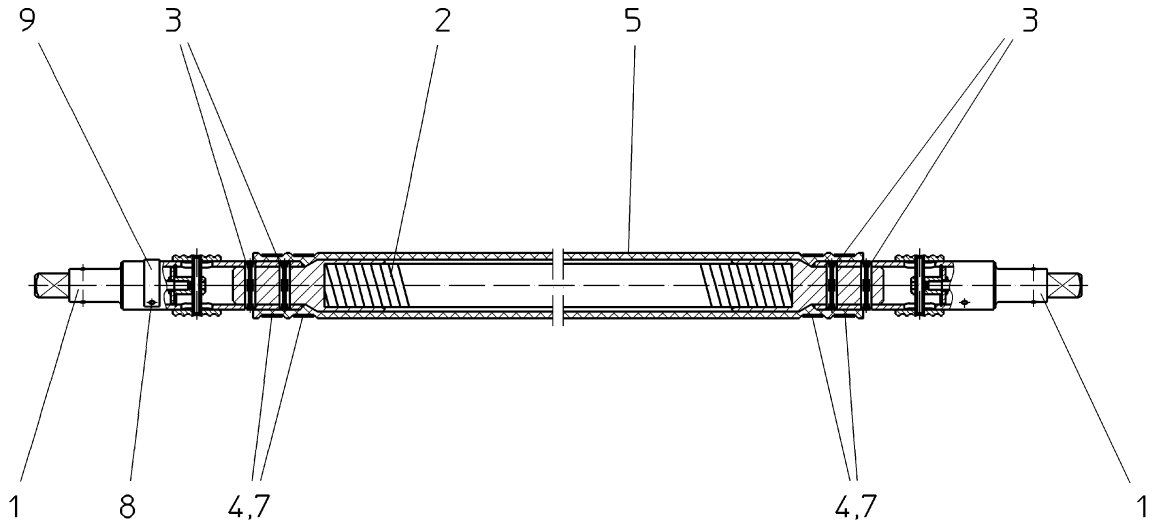
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Crank compl.	103638	2		
2	Crank shaft compl.	103640	1		
3	Drive shaft compl.	103594	1		
4	Intermediate drive compl.	103596	1		
5	Sprocket wheel	103668	1		
6	Chain tensioner	104832	1		
7	Bushing	103645	1		
8	Housing	103646	1		
9	Limit stop	104200	1		
10	Front crankcase cover	103647	1		
11	Rear crankcase cover	103648	1		
12	Allen screw	100687	4	DIN 6912	M5x16-A2
13	Allen screw	100611	1	DIN 6912	M6x12-A2-70
14	Allen screw	100607	7	DIN 6912	M5x12-A2
15	Allen screw	100615	2	DIN 6912	M6x16-A2-70
16	Spring ring	100466	11	DIN 7980	5-140HV-A2
17	Spring ring	100468	2	DIN 7980	A6-A2
18	Clamping pin	100141	2	ISO 8752	6x35-A
19	Needle roller bearing	100844	1		HK 1712
20	Needle roller bearing	100845	1		HK 3516
21	Needle roller bearing	100824	2		HK 1212
22	Needle roller bearing	100828	2		HK 2018 RS
23	Needle roller bearing	100832	1		HK 2518 RS
24	Axial disc	100810	2		AS 1226
25	Axial disc	100813	2		AS 2035
26	Axial disc	100814	1		AS 2542
27	Axial disc	100816	1		AS 3552
28	Chain compl.	103637	1		
29	O-ring	100852	1		72 NBR/872-ø19,2x3
30	USIT-ring	100907	1		70 NBR/120-U6,7x11x2,5
31	Axial ring	100821	1		AS 0821
32	Thread pin	100710	1	ISO 4027	M6x8-A2

Extension compl.
Order No. 202222



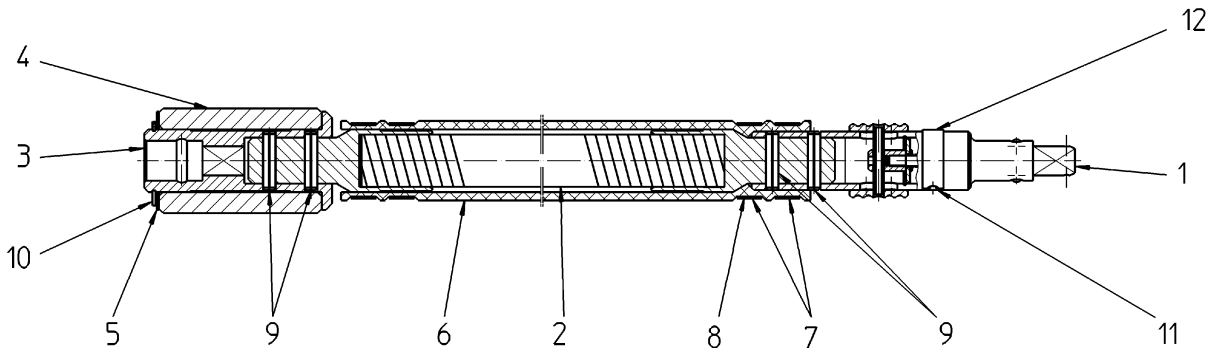
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Connection shank compl.	116354	1		
2	Shaft compl.	108636	1		
3	Clamping pin	100138	1	ISO 8752	6x28
4	Clamping pin	100094	1	ISO 8752	3,5x26
5	Grooved pin	201418	2	ISO 8745	ø3,5x6-St-A3A
6	Identification plate	108659	1		

Connecting shaft compl.
Order No. 108804



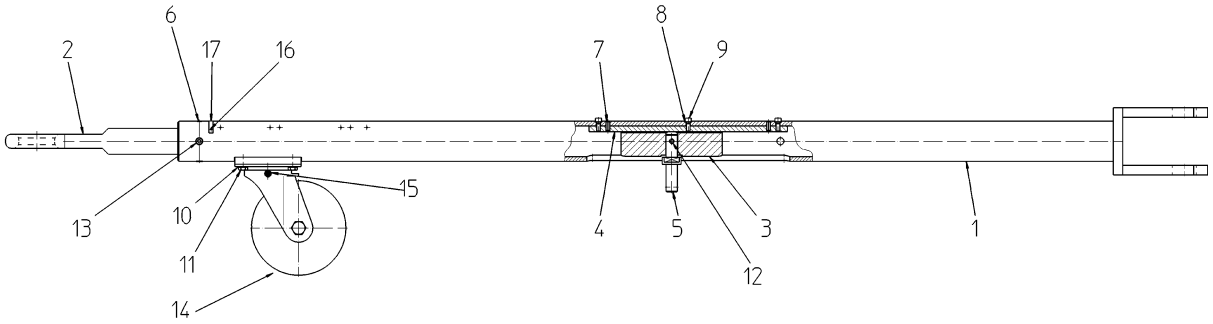
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Connection shank compl.	107249	2		
2	Shaft core compl.	108613	1		
3	Clamping pin	100138	4	ISO 8752	6x28
4	Tensioning belt	113079	4		9x0,3x330 lg.
5	Hose	108755	2		i-ø32x4x1594 lg.
7	Hose band clip lock	106911	4		
8	Grooved pin	201418	2	ISO 8746	ø3,5x6-St-A3A
9	Identification plate	108663	1		

Connecting shaft compl.
Order No. 123022



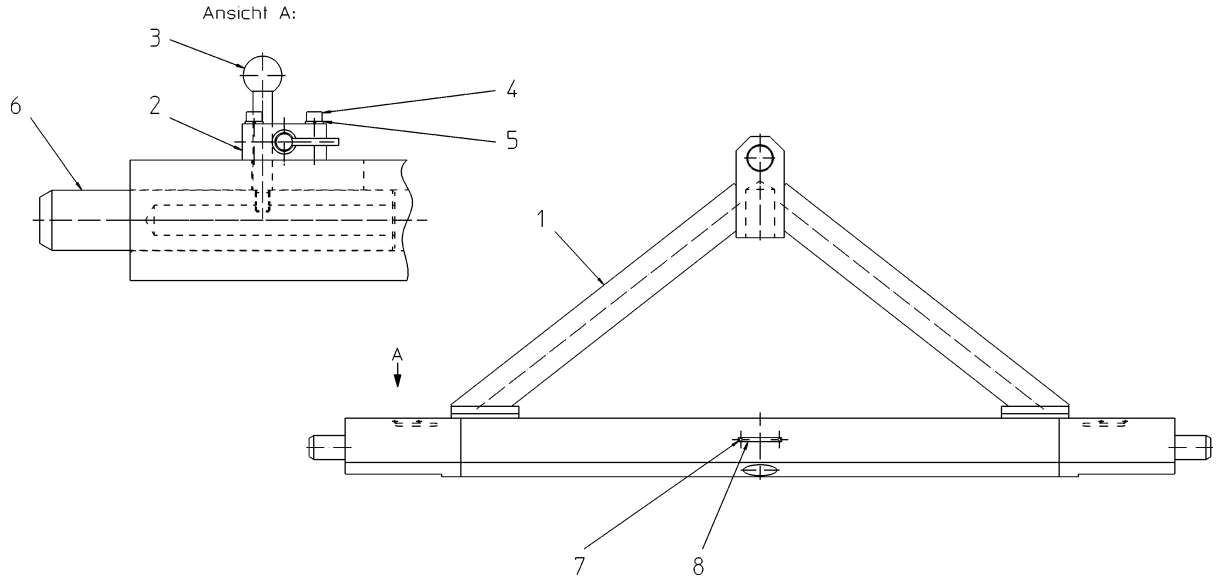
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Connection shank compl.	107249	1		
2	Shaft core compl.	123137	1		
3	Coupling	107937	1		
4	Sleeve	107938	1		
5	Axial disc	107939	1		
6	Hose	123023	1		ø32x4,0x4225
7	Hose band clip lock	106911	4		
8	Tensioning belt	113079	4		EDP 13203 3/8-A2
9	Clamping pin	100138	4	ISO 8752	6x28-A
10	Securing ring	100734	1	DIN 471	30x1,5-A2
11	Grooved pin	201418	2	ISO 8746	ø3,5x6-St-A3A
12	Identification plate	123140	1		

Center part mont. compl.
Order No. 109752



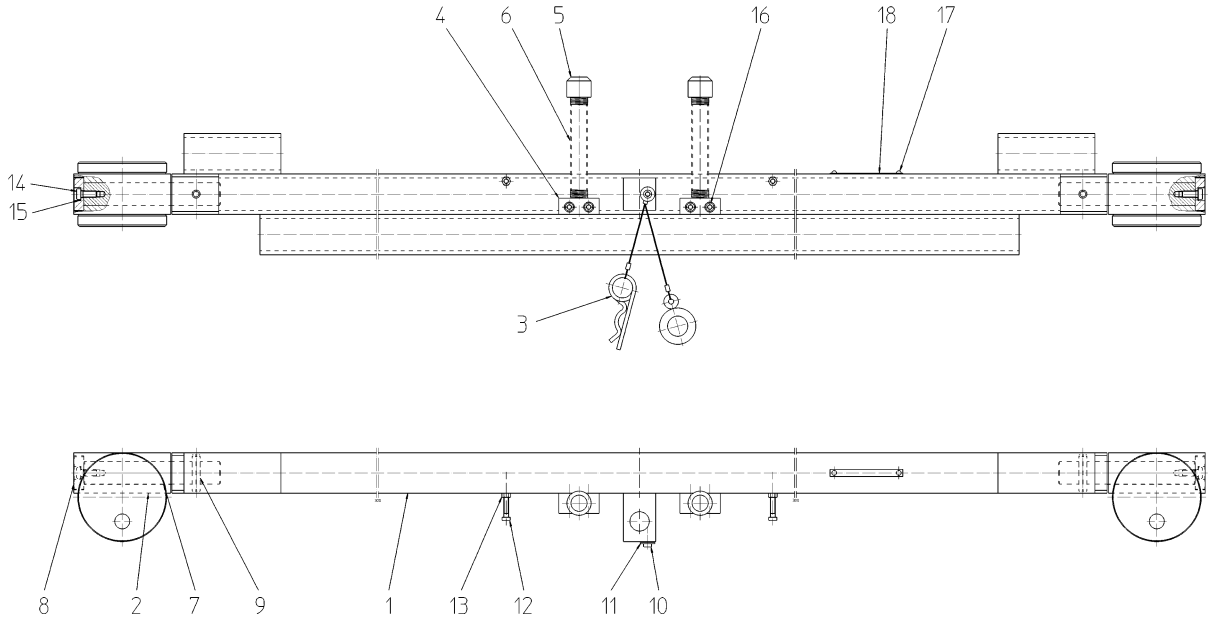
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Center part compl.	109753	1		
2	Eye compl.	108799	1		
3	Sliding part	108262	1		
4	Key	108272	1		
5	Bolt	108274	1		
6	Bolt	108787	1		
7	Clamping pin	100153	2	ISO 8752	8x20-A
8	Spring washer	100456	3	DIN 137	B8-A2
9	Allen screw	100021	3	ISO 4762	M8x20-A2
10	Spring washer	100458	4	DIN 137	B10-A2
11	Hexagonal screw	120260	4	ISO 4017	M10x20-A2
12	Clamping pin	101896	1	ISO 8752	10x60-A
13	Allen screw	101854	1	ISO 4762	M8x30-A2
14	Steering roller	106407	1		L-PO 200 G
15	Disc	106040	1		GPN 900 K4 rot
16	Grooved pin	201418	2	ISO 8746	ø3,5x6-St-A3A
17	Identification plate	109745	1		

Cross bar mont. compl.
Order No. 109751



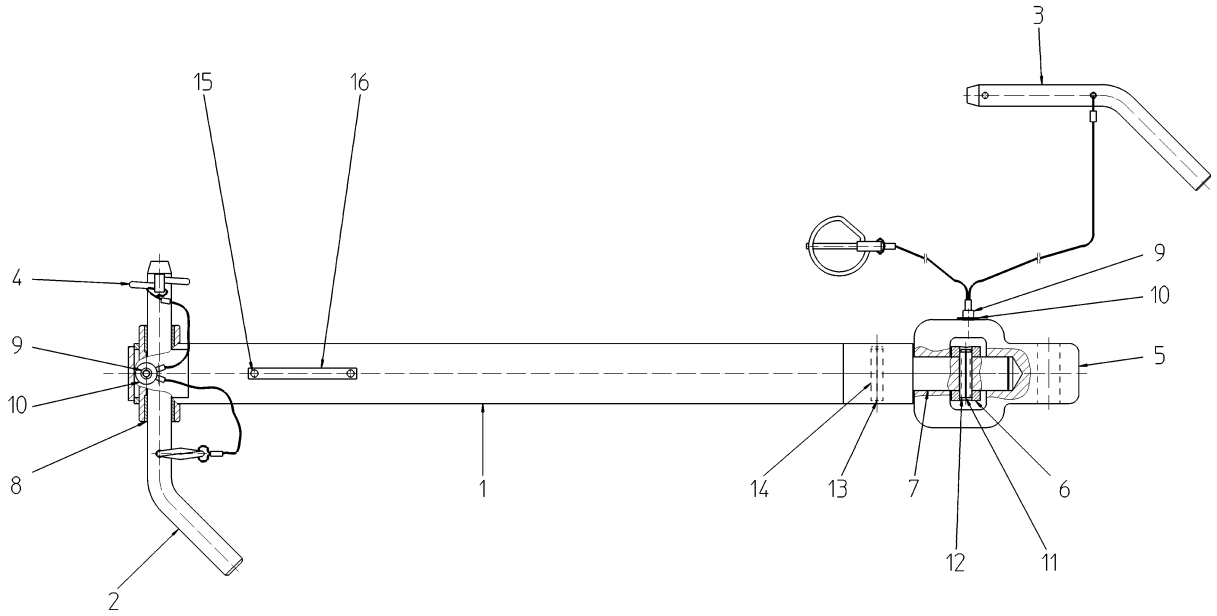
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Cross bar compl.	109203	1		
2	Locking bar compl.	108770	2		
3	Lever	108774	2		
4	Allen screw	106010	4	ISO 4762	M8x50
5	Spring washer	100456	4	DIN 137	B8-A2
6	Bolt	109041	2		
7	Grooved pin	201418	2	ISO 8746	ø3,5x6-St-A3A
8	Identification plate	109746	1		

Brace mont. compl.
Order No. 109756



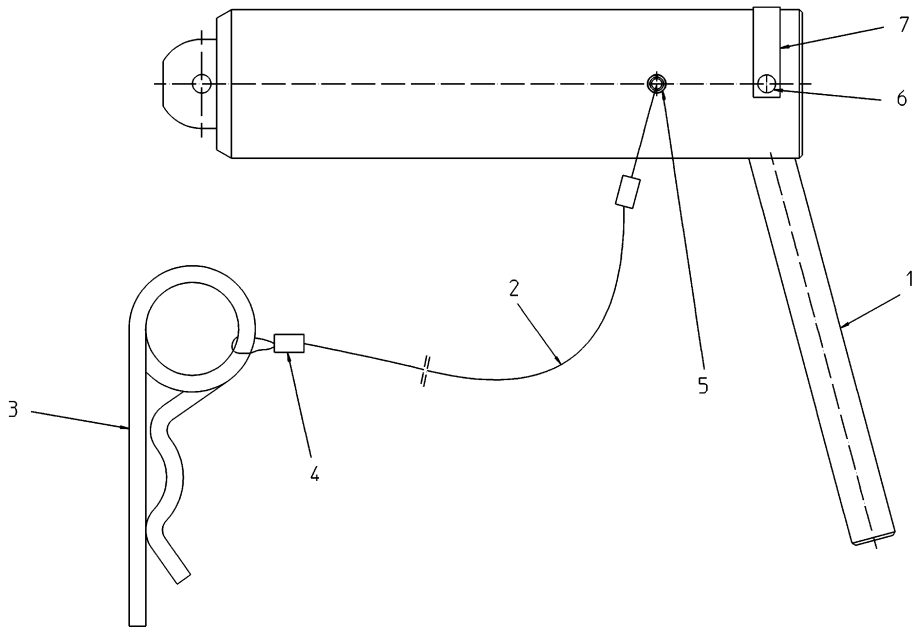
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Brace compl.	109750	1		
2	Mounting link compl.	108798	2		
3	Safety clip	107353	1		
4	Collet	108236	2		
5	Red cap	108349	2		
6	Tension spring	107718	2		
7	Bolt	108583	2		
8	Washer	108584	2		
9	Clamping pin	101890	2	ISO 8752	10x45-A
10	Allen screw	100611	1	DIN 6912	M6x12-A2
11	Washer	100442	1	ISO 7093	6,4-140HV-A2
12	Allen screw	101695	2	DIN 6912	M6x50-A2
13	Hexagonal nut	100354	2	ISO 4032	M6-A2
14	Allen screw	100620	2	DIN 6912	M8x20-A2
15	Spring washer	100456	2	DIN 137	B8-A2
16	Allen screw	100010	4	ISO 4762	M6x20-A2
17	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
18	Identification plate	109747	1		

Steering lever compl.
Order No. 123173



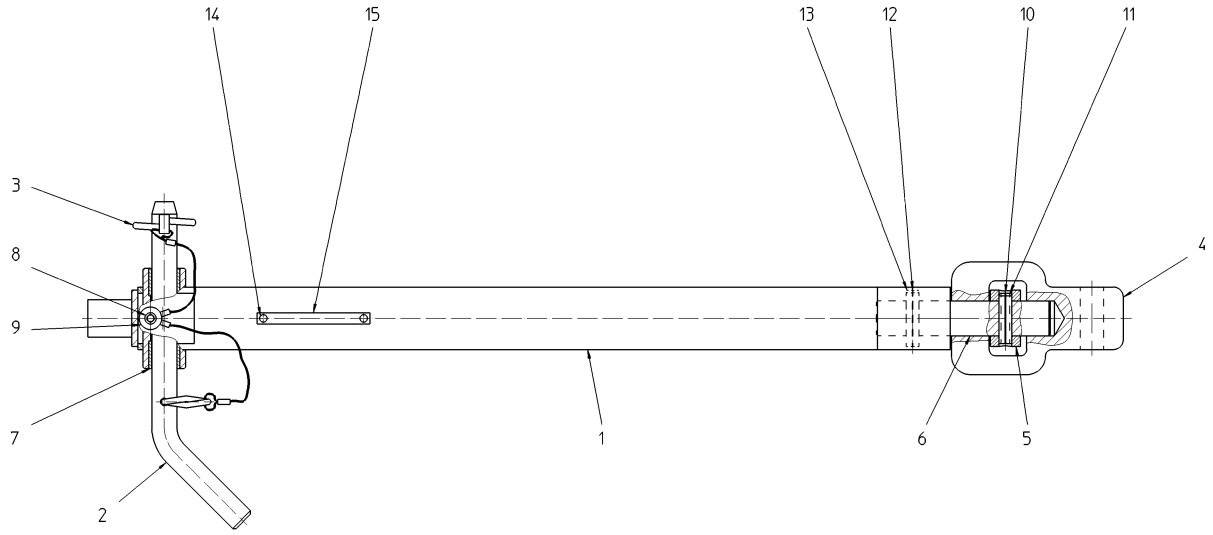
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Collet compl.	123635	1		
2	Pin compl.	119583	1		
3	Pin compl.	108355	1		
4	Linch pin	103597	1		
5	Intermediate piece	108630	1		
6	Adjusting ring	108632	1		
7	Bolt	108634	1		
8	Bushing	121931	2		
9	Allen screw	100065	2	ISO 4762	M6x12-A2-70
10	Washer	100442	2	ISO 7093	6,4-140HV-A2
11	Clamping pin	100143	1	ISO 8752	6x40-A
12	Clamping pin	101889	1	ISO 8752	10x40-A
13	Clamping pin	101883	1	ISO 8752	6x45-A
14	Clamping pin	101890	1	ISO 8752	10x45-A
15	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
16	Identification plate	123185	1		

Bolt mont. compl.
Order No. 109146



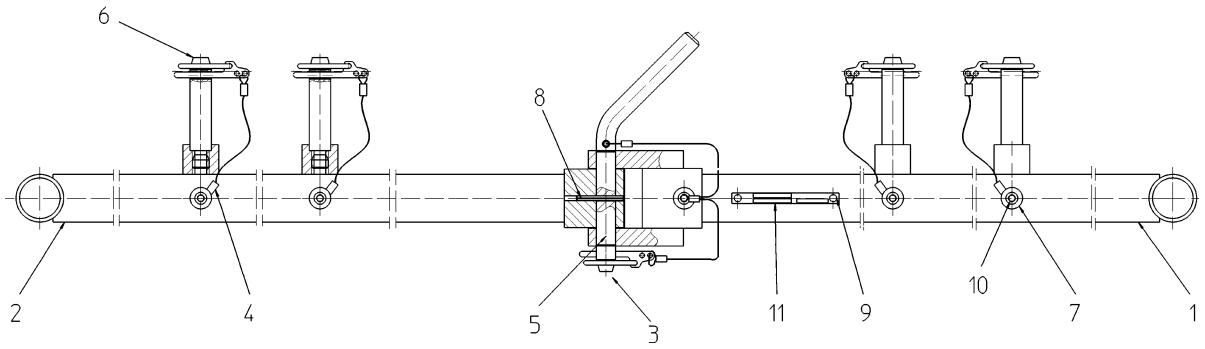
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Bolt compl.	109130	1		
2	Wire cable	109812	1	DIN 3055	ø2x500
3	Safety clip	100555	1	DIN 11024	6,3-A3A
4	Wire rope clip	100570	2	DIN 3093	3-Al
5	Clamping pin	100149	1	ISO 8752	6x45-A
6	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
7	Identification plate	109744	1		

Steering lever compl.
Order No. 123170



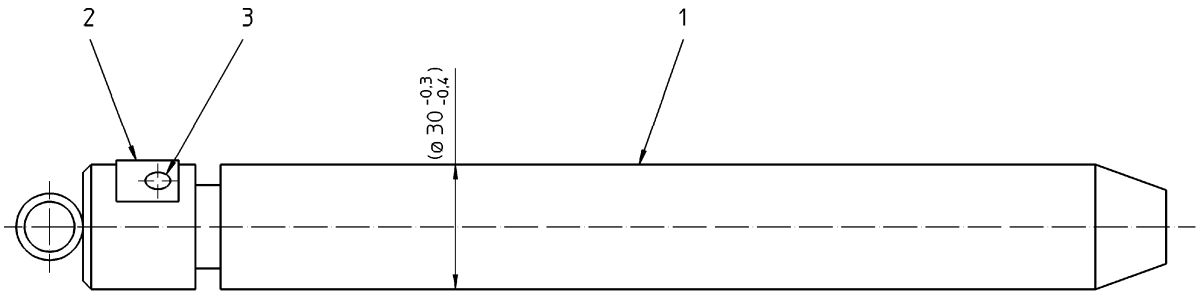
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Collet compl.	123175	1		
2	Pin compl.	119583	1		
3	Linch pin	103597	1		
4	Intermediate piece	108630	1		
5	Adjusting ring	108632	1		
6	Bolt	108634	1		
7	Bushing	121931	2		
8	Allen screw	100065	1	ISO 4762	M6x12-A2-70
9	Washer	100442	1	ISO 7093	6,4-140HV-A2
10	Clamping pin	100143	1	ISO 8752	6x40-A
11	Clamping pin	101889	1	ISO 8752	10x40-A
12	Clamping pin	101883	1	ISO 8752	6x45-A
13	Clamping pin	101890	1	ISO 8752	10x45-A
14	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
15	Identification plate	123183	1		

Steering rod compl.
Order No. 123614



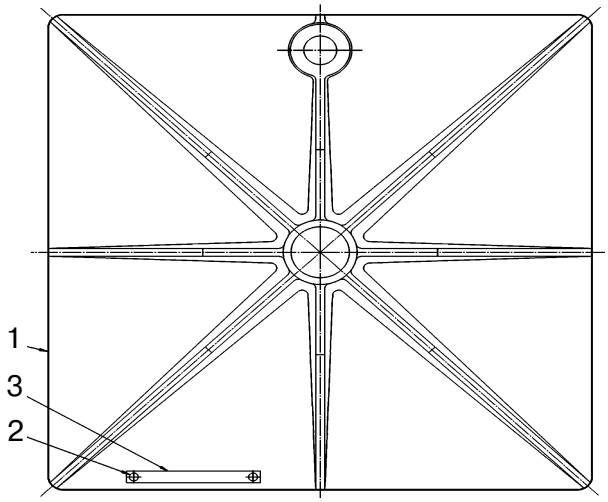
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Arm right compl.	123612	1		
2	Arm left compl.	123613	1		
3	Pin compl.	108769	1		
4	Linch pin compl.	103597	4		
5	Bolt	108786	1		
6	Bolt	116625	4		
7	Washer	100442	5	ISO 7093	6,4-140HV-A2
8	Clamping pin	100107	1	ISO 8752	4x40-A
9	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
10	Allen screw	100065	4	ISO 4762	M6x12-A2-70
11	Identification plate	123681	1		

Pin compl.
Order No. 123615



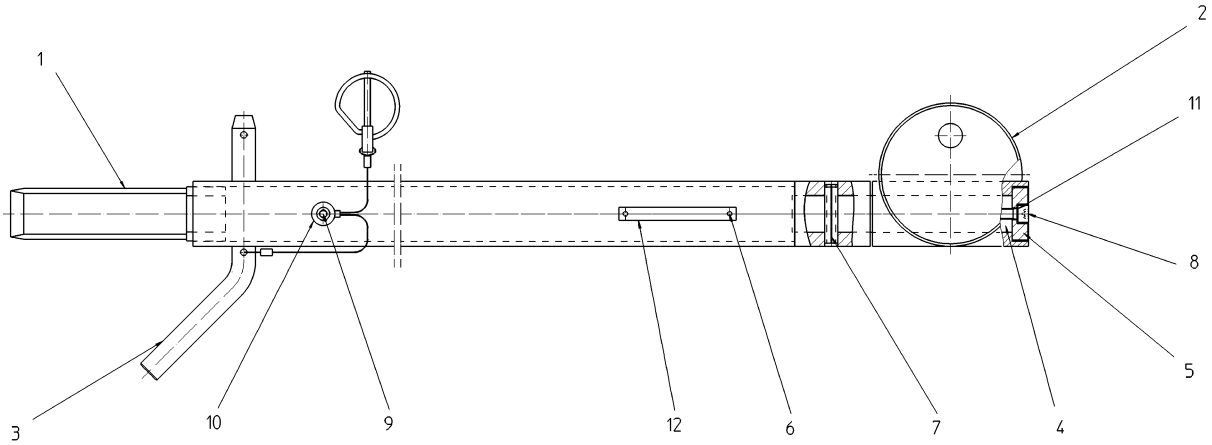
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Pin compl.	123616	1		
2	Supply plate	123618	1		
3	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A

Base plate compl.
Order No. 108712



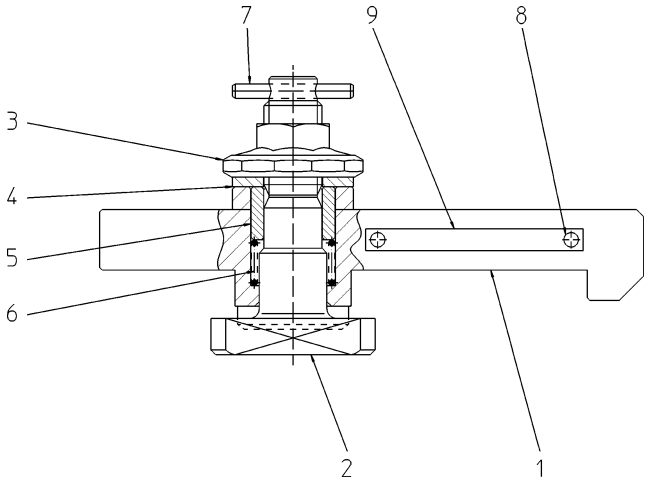
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Base plate	108704	1		
2	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
3	Identification plate	108661	1		

Extension mont. compl.
Order No. 123093



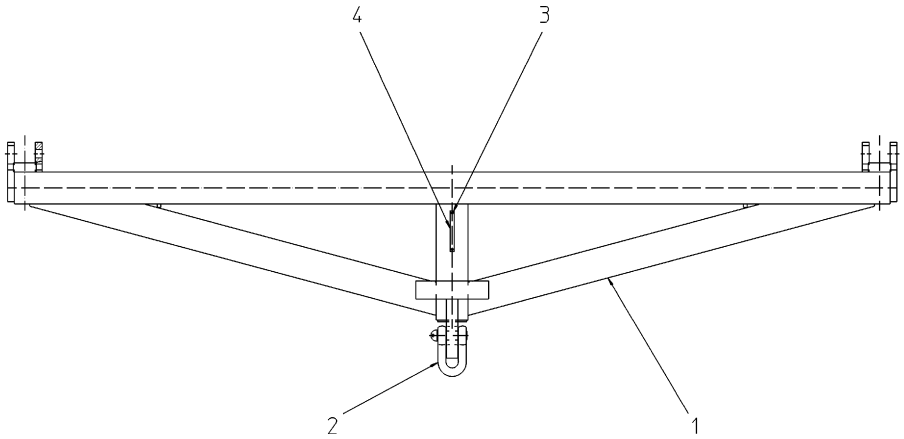
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Extension compl.	123094	1		
2	Mounting link compl.	108798	1		
3	Pin compl.	108355	1		
4	Bolt	108583	1		
5	Washer	108584	1		
6	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
7	Clamping pin	101890	1	ISO 8752	10x45-A
8	Allen screw	100620	1	DIN 6912	M8x20-A2-70
9	Allen screw	101738	1	ISO 4762	M6x12
10	Washer	100442	1	ISO 7093	6,4-140HV-A2
11	Spring ring	100469	1	DIN 7980	8-140HV-A2
12	Identification plate	123096	1		

Retaining bracket compl.
Order No. 121954



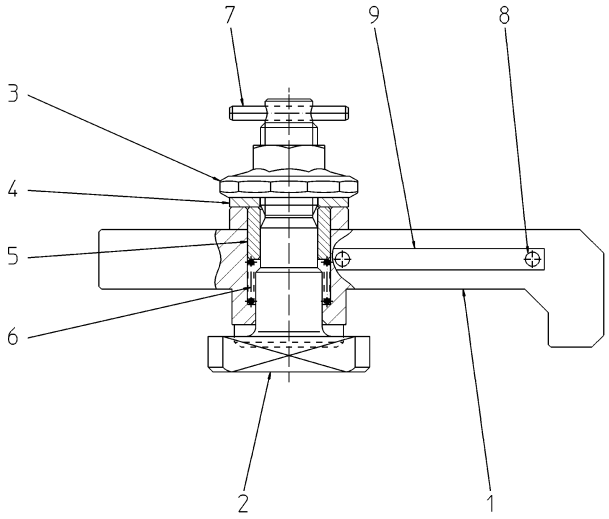
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Console compl.	121939	1		
2	Locking bolt	121937	1		
3	Nut	123607	1		
4	Washer	107925	1		
5	Bushing	108806	1		
6	Compression spring	101074	1	VD-264	34,5x2,5x71,5-A2
7	Clamping pin	100146	1	ISO 8752	6x50-A
8	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
9	Identification plate	123074	1		

Tow bar compl.
Order No. 123171



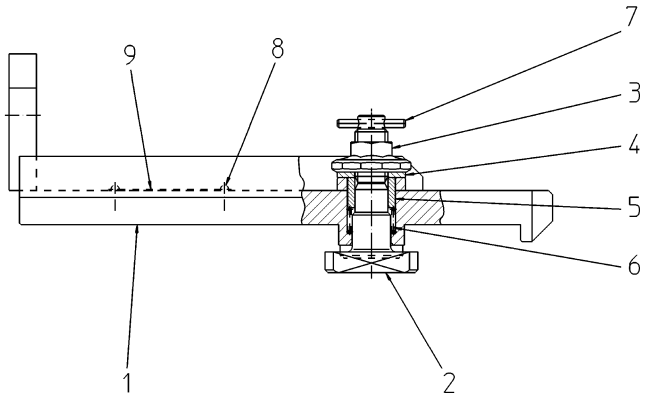
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Tow bar compl.	123176	1		
2	Shackle	120239	1		HA2 3,25t
3	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
4	Identification plate	123186	1		

Retaining bracket compl.
Order No. 123688



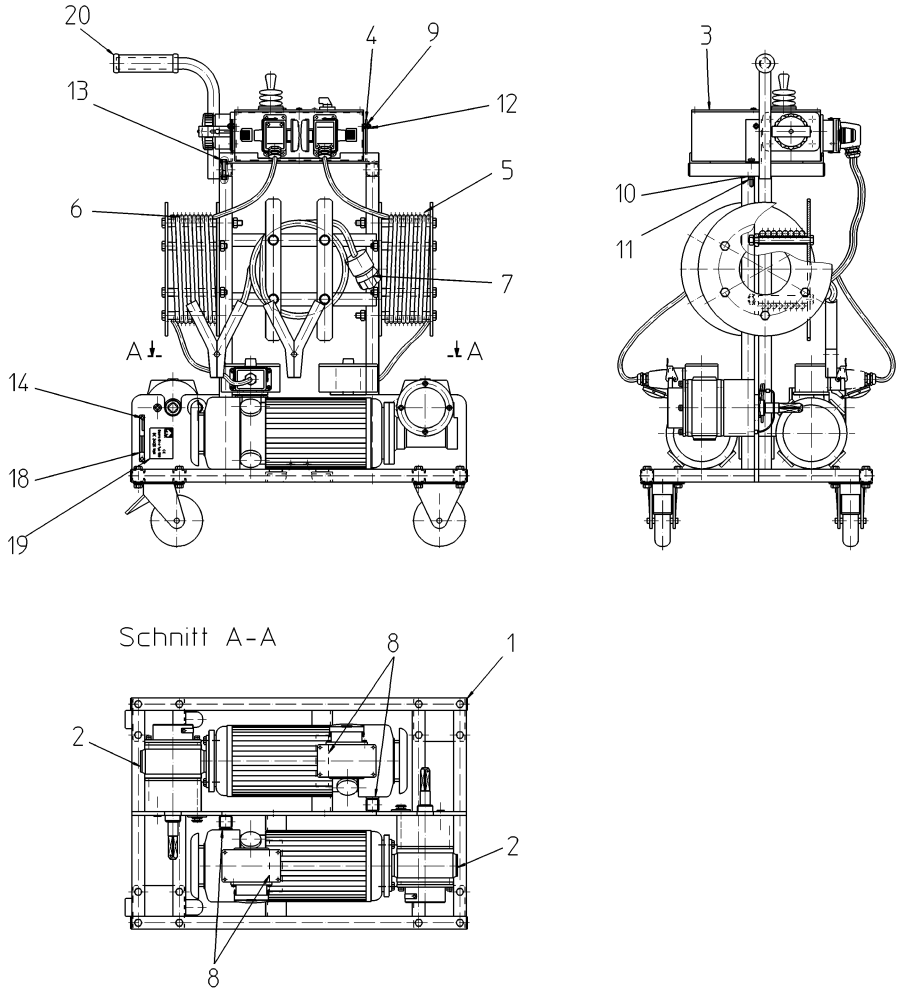
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Console compl.	123648	1		
2	Locking bolt	121937	1		
3	Nut	123607	1		
4	Washer	107925	1		
5	Bushing	108806	1		
6	Compression spring	101074	1	VD-264	34,5x2,5x71,5-A2
7	Clamping pin	100146	1	ISO 8752	6x50-A
8	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
9	Identification plate	123723	1		

Retaining console compl.
Order No. 123689



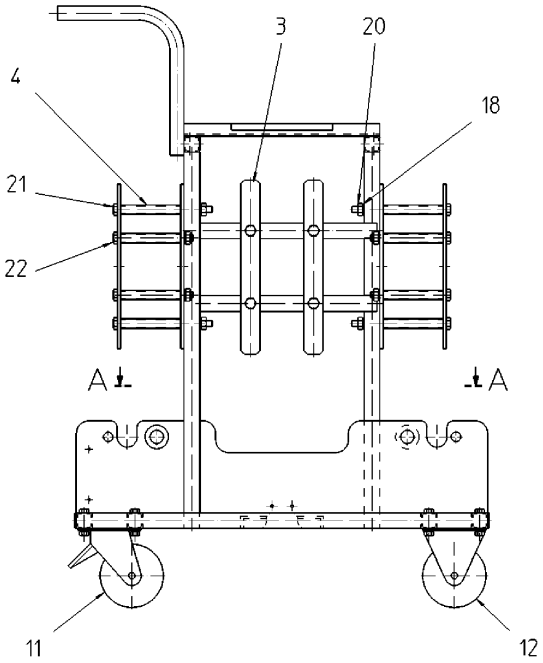
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Console compl.	123797	1		
2	Locking bolt	121937	1		
3	Nut	123607	1		
4	Washer	107925	1		
5	Bushing	108806	1		
6	Compression spring	101074	1	VD-264	34,5x2,5x71,5-A2
7	Clamping pin	100146	1	ISO 8752	6x50-A
8	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
9	Identification plate	123798	1		

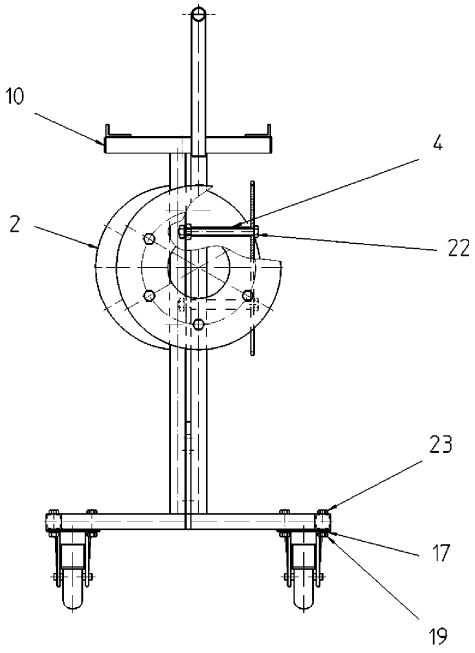
Electric drive compl.
Order No. 209842



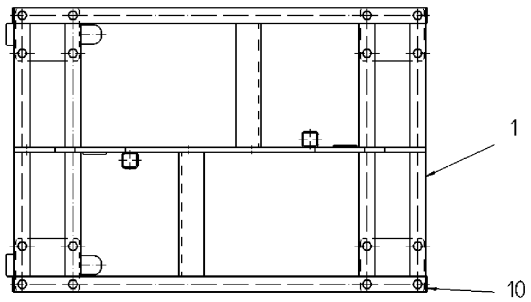
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Frame mont.	208644	1		
2	Geared motor compl.	208622	2		
3	Control box compl.	209902	1		
4	Angular strut	129575	2		
5	Drive cable 1	126256	1		
6	Drive cable 2	126257	1		
7	Feeder	126258	1		
8	Rubber strip	129685	4		
9	Washer	100402	2	ISO 7090	B5,3-A2
10	Spring washer	100453	2	DIN 137	B6-A3P
11	Hexagonal nut	100350	2	ISO 4032	M6-8-A3P
12	Safety nut	101680	2	DIN 985	M5-A2
13	Hexagonal screw	120515	2	ISO 4017	M6x35-8.8-A3P
14	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
16	Plates, english	129689	1		
18	Identification plate	129686	1		
19	Identification plate	108778	1		
20	Handle bar	126260	1		

Frame mont.
Order No. 208644



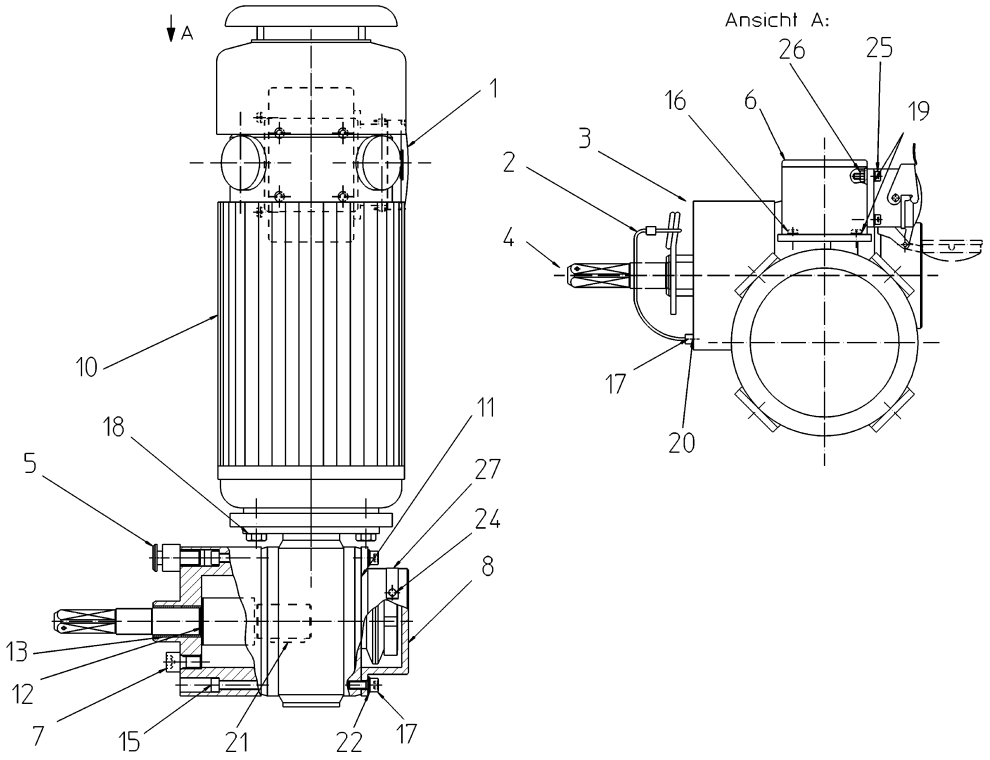


Schnitt A-A



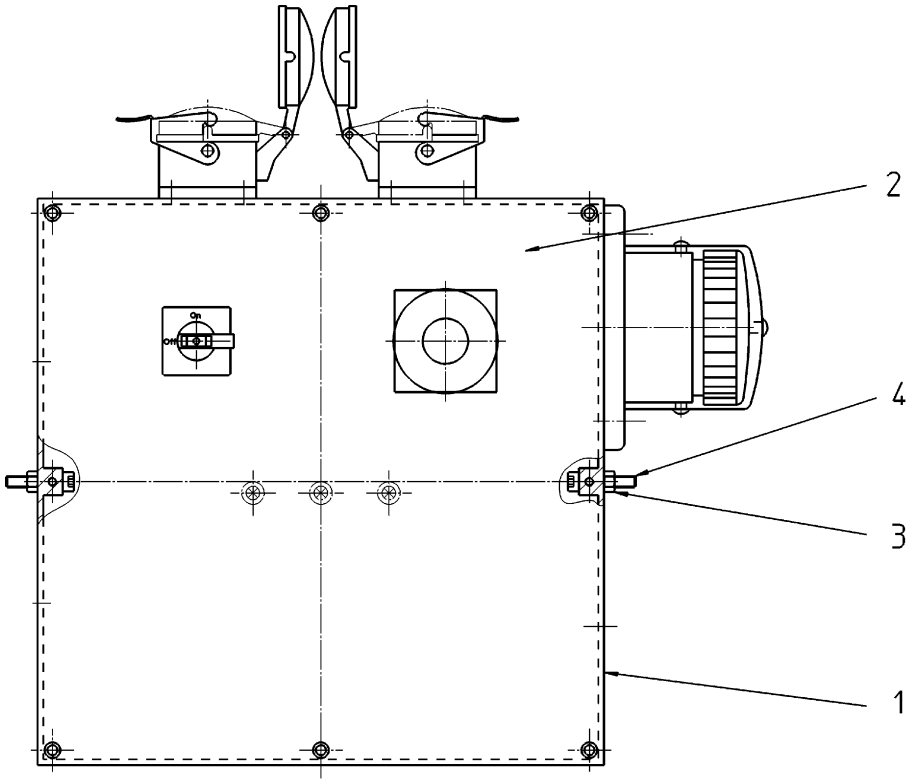
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Frame mont.	129564	1		
2	Drum side	129562	4		
3	Flat rod	129563	2		
4	Tube	129555	16		
10	Lamellar cap	120124	8		25x25
11	Steering wheel	126235	2		L-V100R-ST
12	Jack wheel	126236	2		B-V100R
17	Spring washer	100455	16	DIN 137	B8-A3P
18	Spring washer	100457	16	DIN 137	B10-A3P
19	Hexagonal nut	100356	16	ISO 4032	M8-8-A3P
20	Hexagonal nut	100362	16	ISO 4032	M10-8-A3P
21	Hexagonal screw	106297	4	ISO 4014	M10x150-8.8-A3P
22	Hexagonal screw	100291	12	ISO 4014	M10x120-8.8-A3P
23	Hexagonal screw	100197	16	ISO 4017	M8x35-8.8-A3C

Geared motor compl.
Order No. 208622



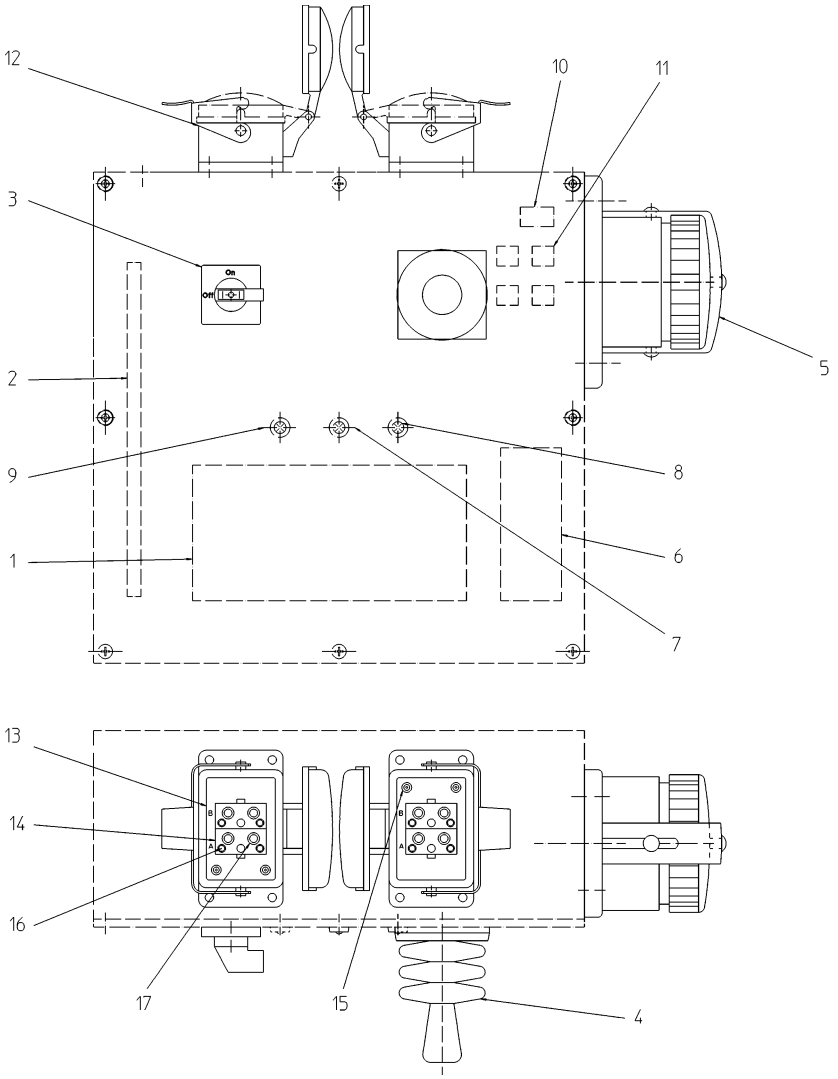
Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Housing bottom part mont.	129545	1		
2	Safety clip	129714	1		
3	Flange	123547	1		
4	Drive shaft	123011	1		
5	Bolt	121187	1		
6	Terminal box	129544	1		
7	Allen screw	129546	1		
8	Cap	129570	1		
10	Geared motor	120600	1	BC310.24.1500.700-P8,B14,RC	
11	Warm gear drive	120586	1	VFL49/P-V6-P80-B14-i=14	
12	Axial washer	100813	1		AS 2035
13	Bushing	100964	2		GLY.PG202315F
15	Allen screw	120153	4	DIN 6912	M6x40-8.8-A3P
16	Allen screw	100662	4	ISO 1207	M4x10
17	Allen screw	101738	5	ISO 4762	M6x12-8.8-A3P
18	Hexagonal screw	101786	4	ISO 4017	M6x20-8.8-A3P
19	Spring washer	100450	8	DIN 137	B4-FSt
20	Washer	100442	1	ISO 7093	6,4-140HV-A2
21	Key	100785	1	DIN 6885	8x7x25
22	Washer	106977	4	ISO 7090	B6,4-A3A
24	Grooved pin	201418	2	ISO 8746	3,5x6-St-A3A
25	Allen screw	106249	4	ISO 4762	M4x16-8.8-A3P
26	Hexagonal nut	100347	4	ISO 4032	M4
27	Identification plate	129295	1		

Control box compl.
Order No. 209902

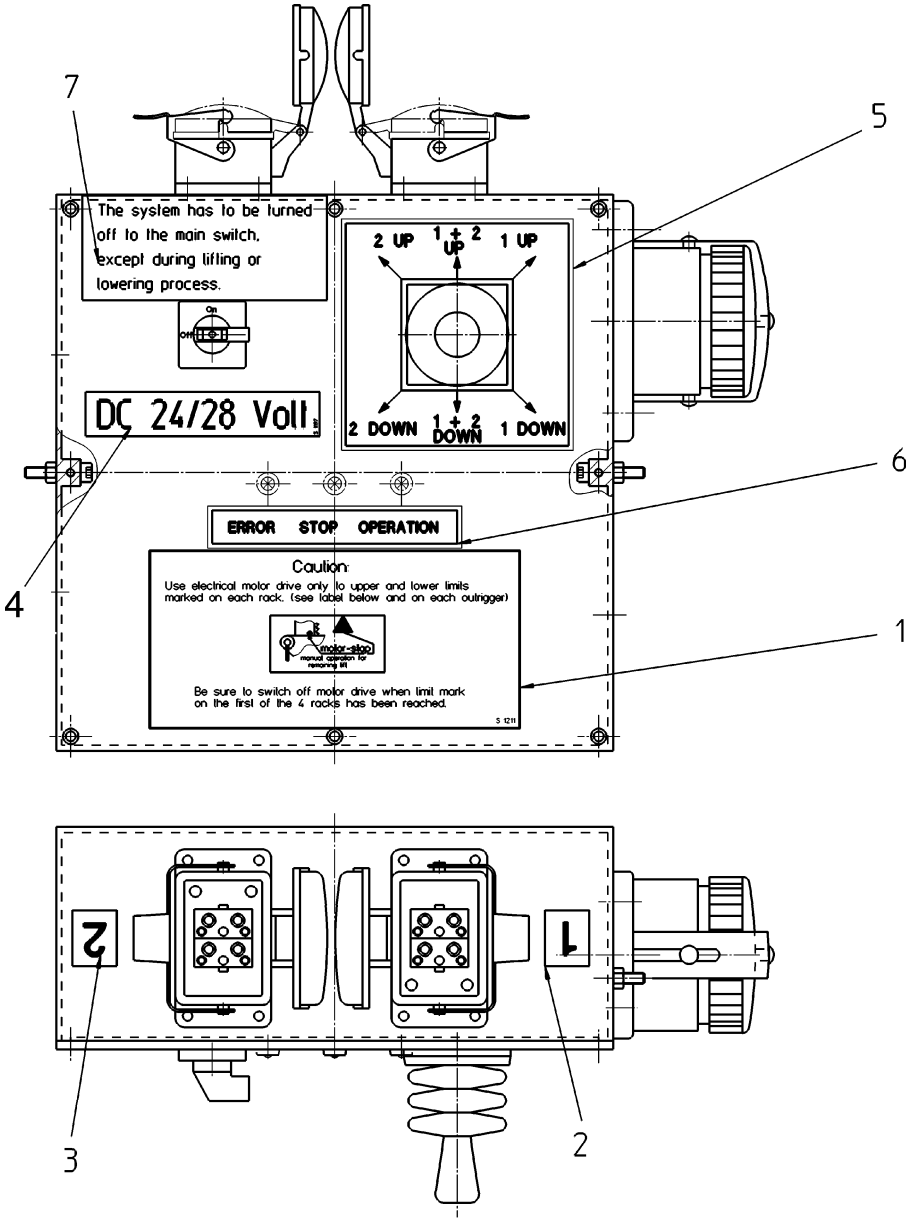


Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Housing compl.	124932	1		
2	Electric parts for control box	120602	1		
3	Hexagonal nut	100349	2	ISO 4032	M5-8-A3P
4	Allen screw	101737	2	ISO 4762	M5x25-8.8-A3P

Electric parts for control box
Order No. 120602



Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Printed circuit board	126268	1		Fa. Krichel
2	Printed circuit board	126273	1		Fa. Krichel
3	Main switch KN 10	126269	1		Fa. Kraus+Naimer
4	Joystick PG JC200	120929	1		Fa. Penny+Giles
5	Power connection VG 96917	126272	1		Fa. Mähler 7.00941.008
6	Contactor AB SW80	120931	1		Fa. Allbright
7	Display LED 5 mm GE HE	120934	1		
8	Display LED 5 mm GN HE	120933	1		
9	Display LED 5 mm R HE	120932	1		
10	Safety 5x20 mm 1A	126270	1		Fa. Gould
11	Safety 10x38 mm 25A	126271	4		Fa. Gould
12	Housing bottom part	120938	2		Fa. Wieland
13	Module frame	120537	2		WIELAND 78.000.0653.0
14	Module insert	120594	4		WIELAND 78.003.0553.0
15	Bolt for polarising key	120911	4		WIELAND 05.592.0621.0
16	Contact - BU 0,5 mm 2	126274	8		WIELAND 02.125.3629.8
17	Contact - BU 4,0 mm 2	126275	8		WIELAND 02.125.4029.8


7
5
The system has to be turned off to the main switch, except during lifting or lowering process.
2 UP
1 + 2 UP
1 UP
2 DOWN
1 + 2 DOWN
1 DOWN
DC 24/28 Volt
6
ERROR STOP OPERATION
Caution:
Use electrical motor drive only to upper and lower limits marked on each rack. (see label below and on each outrigger)
motor-stop
manual operation for removing lift
Be sure to switch off motor drive when limit mark on the first of the 4 racks has been reached.
4
1
2
1
3
2

Pos.	Description	Order No.	Qty.	DIN No.	Dimension
1	Notice plates	106213	1		S 1211 e
2	Notice plates	106682	1		S 1273
3	Notice plates	106683	1		S 1274
4	Notice plates	108570	1		S 1197
5	Notice plates for control box	130061	1		
6	Notice plates for control box	123329	1		
7	Notice plates for control box	123336	1		